EXHIBIT I

EXPERT REPORT OF BRIAN DROLLETTE, PHD

California Sportfishing Protection Alliance v. Pacific Bell Telephone Company
Case No. 2:21-CV-00073-MCE-JDP

Prepared for:
Paul Hastings, LLP

Date:
September 9, 2024

Signed: ____________________

CONTENTS

Figures

Appendices

ACRONYMS/ABBREVIATIONS

BTB	Below the Blue
cm	centimeter
CSPA	California Sportfishing Protection Alliance
DQO	data quality objective
EDF	Environmental Defense Fund
FSP	field sampling plan
ft	feet
Haley & Aldrich	Haley & Aldrich, Inc.
lb/ft	pounds per foot
Mateel	Mateel Environmental Law Foundation
μg/L	micrograms per liter
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MTS	Marine Taxonomic Services, Ltd
NEMI	National Environmental Methods Index
PAHs	polycyclic aromatic hydrocarbons
Pb	lead
QA	quality assurance
QAPP	quality assurance project plan
QC	quality control
Ramboll	Ramboll US Consulting or Ramboll Americas Engineering Solutions, Inc.
SAP	sampling and analysis plan
SWAMP	Surface Water Ambient Monitoring Program
telecom	telecommunications
USEPA	United States Environmental Protection Agency

1. INTRODUCTION

I am a Senior Managing Consultant at Ramboll Americas Engineering Solutions, Inc. (Ramboll), an engineering, design, and consulting firm. I have been retained by Paul Hastings, LLP on behalf of its client, Pacific Bell Telephone Company (Pacific Bell), to provide expert analysis and testimony related to the experimental design and environmental field investigations conducted in the matter of *California Sportfishing Protection Alliance v. Pacific Bell Telephone Company* (Case No. 2:21-CV-00073-MCE-JDP). This matter relates to the presence of, and alleged environmental impact resulting from, two lead-clad telecommunications (telecom) cables submerged in Lake Tahoe. Specifically, I was asked to opine on:

- The implementation of the California Sportfishing Protection Alliance (CSPA) leaching experiments and its representativeness to Lake Tahoe;
- The relevancy of the prior investigations in Lake Tahoe conducted by Marine Taxonomic Services, Ltd (MTS) to determine whether the cables are a material source of lead;
- The quality of the proposed field investigation documents prepared by CSPA; and
- The adequacy of the prior Haley & Aldrich and Ramboll field investigations in Lake Tahoe.

To formulate my opinions I requested and was provided with hundreds of documents related to sampling plans, laboratory reports, field notes, investigation reports, correspondence, and other materials relevant to prior and proposed future environmental investigations of the cables in Lake Tahoe.

A summary of my opinions is provided below. Section 2 of this report summarizes my relevant qualifications. Section 3 presents background information regarding the cables in Lake Tahoe and concepts around environmental investigations. I present my opinions and supporting analyses in Section 4.

1.1 Executive Summary

Two lead-clad telecommunications cables have been submerged for decades in Lake Tahoe. Recent media attention regarding whether these lead-clad cables potentially may leach lead into the environment led to multiple investigations and dozens of water and sediment samples being collected in Lake Tahoe. Results of three thorough investigations, one by the engineering firm Haley & Aldrich on water quality and two by Ramboll on water and sediment quality, demonstrated that the cables are not adversely impacting Lake Tahoe water and sediment quality. Haley & Aldrich's 2021 water sampling and Ramboll's 2023 water sampling used similar sample collection methods and equipment. Both investigations found that dissolved and total lead concentrations were either not detected or were comparable to the range of established background for Lake Tahoe. In each study, lead concentrations were orders of magnitude lower than the USEPA's established drinking water action level of 15 µg/L. Similar to the water studies, Ramboll's sediment investigation found low levels of lead in sediment. All measured lead concentrations in sediment were less than 10 mg/kg and within the same general range, regardless of whether they were collected near the cables or in reference areas. Furthermore, they were below reported background levels for freshwater sediment.

The results of these three studies contradict the vastly different results generated by environmental groups Marine Taxonomic Services (MTS) and Below the Blue (BTB) on behalf of the Wall Street Journal and the Environmental Defense Fund. As discussed in detail in this report, because MTS and BTB fail to establish that their data is representative of actual water conditions in Lake Tahoe near the cables, their data does not show that the cables are adversely affecting Lake Tahoe water quality. A summary of my opinions is provided below:

Opinion 1: The 2021 Haley & Aldrich water sampling investigation and the 2023 Ramboll water and sediment sampling investigations were designed and implemented appropriately to generate valid data to determine whether Lake Tahoe water and sediment quality are being adversely impacted by the

cables. The data reported in these investigations were acquired appropriately with clear and reproducible methodologies. Both consultants also identified and documented suitable locations near the cables as well as reference/experimental control sampling areas based on desktop and visual reconnaissance. The data reported in these investigations are representative of conditions close to the cables and in reference areas of Lake Tahoe away from the cables. The water and sediment samples in each of these investigations were analyzed using appropriate USEPA methods, and all three investigation reports included sections describing data validation or data usability that followed USEPA guidelines. The data showed that the water and sediment quality are not being adversely impacted.

Opinion 2: The CSPA cable lead leaching experiments are insufficiently documented and inadequately supported to show the conditions they simulated are representative of the conditions in Lake Tahoe. Because CSPA and its consultants did not provide pertinent experimental design and reporting information for their experiments, there is insufficient basis to conclude from these experiments that the cables are adversely impacting Lake Tahoe water quality.

Opinion 3: CSPA's proposed field investigation documentation lacks sufficient detail to assess the scope of the proposed sampling.

Opinion 4: MTS' prior field investigations in Lake Tahoe do not demonstrate an adverse impact to Lake Tahoe water quality resulting from the cables. Although MTS conducted multiple field investigations in Lake Tahoe to collect water and sediment samples for analysis of lead, details and results of these investigations were poorly reported. In some instances only laboratory reports and limited email correspondence were available that provided any information on the Lake Tahoe investigations. The investigations lacked pre-planning information, and MTS did not collect adequate Quality Assurance/Quality Control samples. MTS did not report the implementation and results of the investigation in an appropriate format, and in many instances it did not even indicate where samples were collected. Furthermore, MTS itself acknowledged that its data were not analyzed in a manner to determine the source of the lead.

2. QUALIFICATIONS

I am employed by Ramboll as a Senior Managing Consultant in Ramboll's Westford, Massachusetts office. I work primarily in Ramboll's Site Solutions practice which focuses on site-related projects including investigation, remediation, and other assessments of contaminants in the environment. I co-lead Ramboll's North America Subject Matter Experts team for per- and polyfluoroalkyl substances (PFAS) and other emerging contaminants. I have over ten years of professional and academic experience with complex environmental chemistry matters.

I obtained a Bachelor of Science degree in Environmental Science with a minor in Hydrogeology from the State University of New York College at Plattsburgh, a Master of Science degree in Civil and Environmental Engineering from Duke University, and a Master of Science and a Doctor of Philosophy degree in Engineering and Applied Science with a concentration in Chemical and Environmental Engineering from Yale University.

My consulting practice has focused on environmental forensics, including the assessment of contaminant fate, transport, and source attribution. This includes investigating the sources of contaminants, including lead, in the environment from geogenic and anthropogenic sources such as industrial manufacturing operations, oil and gas development, and more. As a consultant retained on behalf of AT&T, I have been involved in over a dozen investigations of lead-clad telecom cable sites, with my role ranging from the conceptual experimental design phase to the implementation of the field work to communicating the investigation findings.

I have published articles in well-respected, peer-reviewed journals related to contaminant fate in the environment and I regularly attend and am invited to present on the topic at professional conferences. I am an active member of the Environmental Business Council of New England and serve on the leadership board for the Council's Water Resources Committee. I am a member of the National Groundwater Association and am on the New York State Drinking Water Source Protection Program stakeholder committee for the City of Plattsburgh. My curriculum vitae is attached as Appendix A to this report.

The opinions set forth in this report are based on my education, training, and experience as an environmental professional. They are also based on my review and analysis of relevant scientific literature as well as documents and data provided in this matter. A list of those documents is attached as Appendix B to this report. I reserve the right to supplement these opinions as additional information becomes available. I also reserve the right to comment on opinions of the Plaintiff's experts in this matter.

My employer, Ramboll, is compensated for my services in this matter at a rate of $430 per hour.

3. BACKGROUND

This section provides necessary background information that is foundational to the development of my opinions. The subsections present an overview of the telecom cables in Lake Tahoe, CSPA's allegations regarding those cables, AT&T's prior investigations to determine whether the cables were adversely impacting Lake Tahoe water quality due to lead, and general information on field investigation and design.

3.1 Lake Tahoe Telecommunications Cables

Historical telecom infrastructure utilized lead cladding on cables to prevent moisture intrusion and signal loss. Underwater cables were deployed wrapped in steel cable armoring for protection and included layers of impregnated paper and bitumen.[1] According to CSPA, two lead-clad telecom cables are submerged in Lake Tahoe.[2] One telecom cable is near the mouth of Emerald Bay (Cable A) while the other extends along the western shoreline of Lake Tahoe (Cable B; Figure 1). The lead cladding of the telecom cables is wrapped in steel cable armoring and bitumen jute, and in some locations along the cables, these outer steel and jute layers are damaged.[3] These observations were also made by AT&T's consultants during their investigations.

3.2 Plaintiff Allegations Regarding Lake Tahoe Cables

CSPA alleges that "Lake Tahoe water contacts the lead sheathing in the cables and dissolves the lead, and then distributes the lead throughout Lake Tahoe and its larger environment."[4] CSPA claims to support this allegation through an experiment in which a 40-centimeter (cm) piece of "one of the cables" was submerged into a plastic container of Lake Tahoe water.[5] According to CSPA, after one day of the cable being submerged, the water lead concentration was 650 micrograms per liter (µg/L) and after one week was 1,500 µg/L. From this single experiment CSPA infers "that lead in the cables is being disseminated into the aquatic environment of Lake Tahoe, and that humans and wildlife who make contact with, or who drink, Lake Tahoe water are exposed to the toxic heavy metal, lead."[6] A summary of those experiments is provided in Section 4.2.

Other investigations of Lake Tahoe water quality in context of the cables have been conducted. In 2022 and 2023, MTS and Below the Blue (BTB) on behalf of the Environmental Defense Fund (EDF), implemented multiple field investigations in Lake Tahoe to collect water, sediment, and cable shaving samples that were analyzed by commercial laboratories for lead and other parameters.[7] A summary of those investigations based on my review of materials produced in this matter is provided in Section 4.4.

In January 2024, in addition to the sampling previously conducted, CSPA submitted a declaration ("CSPA Declaration") describing a proposed field investigation in Lake Tahoe to be implemented in

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[1] Gey, C. 1997. Telephone Cables. Handbook of Cathodic Corrosion Protection: Theory and Practice of Electrochemical Protection Processes. Gulf Professional Publishing. Pp. 323-334.

[2] Second Amended Complaint for Declaratory and Injunctive Relief and Civil Penalties. California Sportfishing Protection Alliance v. Pacific Bell Telephone Company. Paragraph 5.

[3] Second Amended Complaint for Declaratory and Injunctive Relief and Civil Penalties. California Sportfishing Protection Alliance v. Pacific Bell Telephone Company. Pp. 15-16.

[4] Second Amended Complaint for Declaratory and Injunctive Relief and Civil Penalties. California Sportfishing Protection Alliance v. Pacific Bell Telephone Company. Paragraph 23.

[5] Second Amended Complaint for Declaratory and Injunctive Relief and Civil Penalties. California Sportfishing Protection Alliance v. Pacific Bell Telephone Company. Paragraph 7.

[6] Second Amended Complaint for Declaratory and Injunctive Relief and Civil Penalties. California Sportfishing Protection Alliance v. Pacific Bell Telephone Company. Paragraph 7.

[7] MTS. 2023a. Lead Cable Investigation. Prepared for Tom Neltner, Environmental Defense Fund. Prepared by Monique Rydel Fortner and Seth Jones, Marine Taxonomic Services, Ltd. June 30, 2023. BTBMTS0016103 at 16110, 16168.

April and May 2024.[8] The declaration proposed to collect water and sediment samples at 30 separate locations in the vicinity of the cables in Lake Tahoe and analyze the samples at a contract laboratory for metals, including lead, and other geochemical parameters.[9] I was informed by counsel for Pacific Bell that this field investigation has already been implemented but that results, documentation of field activities, or other materials related to the investigation were not provided by CSPA for review.

3.3 AT&T Investigations of Lake Tahoe Cables

In response to claims that the cables in Lake Tahoe were leaching lead and adversely impacting Lake Tahoe water quality, AT&T commissioned three field studies in Lake Tahoe to investigate those allegations.

In March 2021, Haley & Aldrich, Inc. (Haley & Aldrich), on behalf of AT&T, conducted a visual inspection of Cable A and Cable B (Figure 1).[10] The field team also collected water samples in locations close to the cables and in reference areas away from the cables for analysis of total and dissolved lead, copper, iron, and manganese.[11] Results of that investigation found mostly non-detectable concentrations of total and dissolved lead with the highest concentrations measured up to estimated values (i.e., J qualified) of 0.06 µg/L for total lead and 0.08 µg/L for dissolved lead.[12] The highest concentrations of total lead were found in the field investigation control/reference area approximately 3.5 miles southeast of the sampling stations that were proximal to the cables.[13]

In June and July 2023, Ramboll US Consulting (Ramboll),[14] on behalf of AT&T, conducted a water sampling and a sediment sampling investigation in Lake Tahoe. Ramboll collected 15 water samples from six separate stations around the cables and in reference areas away from the cables.[15] All water samples, regardless of whether they were collected close to the cables or in reference areas away from the cables, had low to non-detectable levels of total or dissolved lead. The highest total lead concentration was 0.064 µg/L and the highest dissolved lead concentration was 0.049 µg/L.[16] Ramboll also collected 23 sediment sample from locations close to the cables and in reference areas away from the cables. All sediment samples, regardless of whether they were collected close to the cables or away from the cables, had low levels of lead ranging from 0.548 mg/kg to 7.57 mg/kg which were within or below background levels for freshwater sediments.[17]

3.4 California State Parks Water Sampling

On June 1, 2023, at the direction of the California Department of Parks and Recreation (known popularly as California State Parks), Cranmer Laboratories (Cranmer Engineering Inc.) collected one

[8] CSPA. 2024. Second Supplemental Declaration of Matthew C. Maclear in Support of Plaintiff's Motion to Amend Scheduling Order. California Sportfishing Protection Alliance v. Pacific Bell Telephone Company. United States District Court Eastern District of California. Case No. 2:21-cv-00073-JDP. January 25, 2024. At p. 10.
[9] CSPA. 2024. Second Supplemental Declaration of Matthew C. Maclear in Support of Plaintiff's Motion to Amend Scheduling Order. California Sportfishing Protection Alliance v. Pacific Bell Telephone Company. United States District Court Eastern District of California. Case No. 2:21-cv-00073-JDP. January 25, 2024. At p. 25.
[10] Haley and Aldrich 2024. Supplemental Report on Lake Tahoe Field Sampling and Analysis of Impacts of Legacy Telecommunications Cables on Water Quality, South Lake Tahoe, California. June 2024. At p. 3 of 131.
[11] Haley and Aldrich 2024. Supplemental Report on Lake Tahoe Field Sampling and Analysis of Impacts of Legacy Telecommunications Cables on Water Quality, South Lake Tahoe, California. June 2024. At p. 8 of 131.
[12] Haley and Aldrich 2024. Supplemental Report on Lake Tahoe Field Sampling and Analysis of Impacts of Legacy Telecommunications Cables on Water Quality, South Lake Tahoe, California. June 2024. At p. 11 of 131.
[13] Haley and Aldrich 2024. Supplemental Report on Lake Tahoe Field Sampling and Analysis of Impacts of Legacy Telecommunications Cables on Water Quality, South Lake Tahoe, California. June 2024. At p. 6, 11 of 131.
[14] In September 2023, Ramboll US Consulting underwent a legal entity consolidation and is now Ramboll Americas Engineering Solutions, Inc. For purposes of this report, I use "Ramboll" to refer to both entities.
[15] Ramboll 2023a. Lake Tahoe Water Lead Study, Lake Tahoe, California. August 3 2023. P1880_CP086_000000018 at p. 5 of 39.
[16] Ramboll 2023a. Lake Tahoe Water Lead Study, Lake Tahoe, California. August 3 2023. P1880_CP086_000000018 at p. 7 of 39.
[17] Ramboll 2023b. Lake Tahoe Sediment Lead Study, Lake Tahoe, California. August 24 2023. ATT_000021909 at 21931.

water sample from the raw surface water intake at Eagle Point Campground.[18] The campground is located on a peninsula that separates the east side of Emerald Bay from the main part of Lake Tahoe. It has a drinking water intake in Emerald Bay. The sample, identified as GFF0048-01, was analyzed for lead via USEPA 200.8 and reported as non-detect at a reporting limit of 0.5 µg/L.[19] On June 13, 2023, an additional sample (GFF0546-01) was collected from the Eagle Point Distribution location and also analyzed via USEPA 200.8; the lead concentration was 0.602 µg/L.[20]

3.5 Field Investigation and Experimental Design

Determining the sources of a contaminant in the environment generally begins with an environmental assessment of a site and may include the collection of samples to understand the presence and concentration of that contaminant.[21] Field investigations to collect samples may take on many different forms, but they often include certain elements to ensure the acquired data are reliable and representative to answer the questions at hand. These elements generally include the development of a sampling plan, work plan, or other documents that describe proposed field activities and specify objectives of the investigation. Aspects of a field sampling event often considered for acquiring reliable and representative data include, but are not limited to:

- Considerations of the target sample matrix (e.g., soil, surface water, sediment, etc.);
- The location(s), including coordinates, where samples should be collected;
- Sample collection procedures;
- Field measurements (i.e., data acquired while in the field during the investigation);
- Sample preservation, chain of custody, and transport;
- Laboratory analytical methods;
- Data quality objectives, and more.

Various federal agencies, state agencies, and professional organizations have published guidance documents to consult when planning for a field sampling event. The USEPA and the State of California each provide reference guidance documents to assist when planning a field investigation. These include approaches for writing procedural documents to implement that investigation, such as a sampling and analysis plan (SAP), which incorporates the elements of a field sampling plan (FSP) and quality assurance project plan (QAPP). In addition, these agencies and organizations publish standard operating procedures to implement during sampling and methodologies to acquire reliable and representative data, such as guidance for the physical collection of specific media and analytical methodologies for specific media under a certain regulatory regime (e.g., tap water under the National Primary Drinking Water Regulations). An example of guidance relevant to California is the California State Water Resources Control Board's Surface Water Ambient Monitoring Program (SWAMP), which provides instruction on how to evaluate surface water quality conditions throughout the state.[22] SWAMP maintains resources and documentation for water quality investigations, such as one on writing a QAPP that "establishes the requirements for collecting data" as part of a field investigation.[23] While the SWAMP QAPP is not required for non-SWAMP projects, it is a useful reference to ensure data that are produced are "scientifically valid and defensible, and of known and documented quality" and has elements in accordance with other USEPA guidance.[24]

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[18] Rezvani. 2023. Email Re: Wall Street Journal on Eagle Point Campground Water; Deadline: COB Today. June 1, 2023. P1880_CP160_000001255 at p. 1.
[19] Cranmer Engineering Inc. 2023a. Eagle Point Intake Sample Results. June 5, 2023. P1880_CP160_000001052 at p. 1.
[20] Cranmer Engineering Inc. 2023b. Eagle Point Distribution Sample Results. June 15, 2023. At p. 1 of 3.
[21] Murphy, B.L. and Morrison, R.D. 2015. Introduction to Environmental Forensics, Third Edition. Academic Press, Oxford, GB.
[22] See: https://www.waterboards.ca.gov/centralvalley/water_issues/swamp/. Accessed June 24, 2024.
[23] SWAMP 2022. Surface Water Ambient Monitoring Program Quality Assurance Program Plan. January 2022. Page 11.
[24] SWAMP 2022. Surface Water Ambient Monitoring Program Quality Assurance Program Plan. January 2022. Page 11.

3.5.1 Sampling and Analysis Plan and Quality Assurance Project Plan

SAPs and QAPPs are documents that describe in detail the elements of an environmental sampling program so it is reproducible and generates scientifically-defensible data. The USEPA describes the purpose of a SAP as "the procedural and analytical requirements for one-time, or time-limited, projects involving the collection of water, soil, sediment, or other samples taken to characterize areas of potential environmental contamination. It combines the basic elements of a Quality Assurance Project Plan (QAPP) and a Field Sampling Plan (FSP)."[25] It is intended to describe key elements of a field investigation including sampling locations, sampling and analytical methods to be used, sample storage and shipment, and data management. A QAPP, according to USEPA, "is a formal planning document which describes how environmental information operations are planned, implemented, documented, and assessed during the life cycle of a project."[26] Further, QAPPs describe "the necessary Quality Assurance (QA) and Quality Control (QC) requirements and other technical activities that must be implemented to ensure that the results of the environmental information operations performed will satisfy the stated performance and acceptance criteria."[27] In general, a QAPP contains similar elements to a SAP such as general categories of project management, data generation and acquisition, project assessment and oversight, and data validation and usability.[28] They both should detail proper chain-of-custody procedures, field documentation, collection of QA/QC samples such as field duplicates and blanks, and more.

3.5.2 Analytical Determinations

An important element in a field investigation is the analytical methodology to be used to generate scientifically defensible data. The investigation's data quality objectives (DQOs) need to be considered when choosing an analytical method. One needs to determine what media are being sampled (i.e., soil, sediment, groundwater, surface water, drinking water, etc.) and what analytical methodologies are appropriate for each media for a given analyte. Commercial or research laboratories are often selected during the project planning phase that can achieve the required method detection and reporting limits for the analyte, are certified for the analytical methods to be used in the state where the data will be reported, can achieve necessary turnaround times, and more.

Analytical method selection for a particular analyte such as lead can depend on the sample type, regulatory program under which the investigation is occurring, screening or other levels for which to compare results, and even the state in which the investigation is occurring. Guidance for appropriate analytical methods can be found in state and federal agency guidance, or in online resources such as the National Environmental Methods Index (NEMI).[29] Examples of analytical methods for the determination of metals, such as lead, in water samples include USEPA Method 200.7 (Determination of Metals and Trace Elements in Water and Wastes by Inductively Coupled Plasma-Atomic Emission Spectrometry)[30], USEPA Method 200.8 (Determination of Trace Elements in Waters by Inductively Coupled Plasma – Mass Spectrometry)[31], and USEPA Method 6020B (Inductively Coupled Plasma-Mass

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[25] USEPA 2014a. Sampling and Analysis Plan Guidance and Template. Version 4. R9QA/009.1. United States Environmental Protection Agency. May 2014. Page 1.
[26] USEPA 2023. Quality Assurance Project Plan Standard. United States Environmental Protection Agency. August 21 2023. Page 1.
[27] USEPA 2023. Quality Assurance Project Plan Standard. United States Environmental Protection Agency. August 21 2023. Page 1.
[28] USEPA 2002. Guidance for Quality Assurance Project Plans. EPA QA/G-5. United States Environmental Protection Agency, Office of Environmental Information, Washington, D.C. EPA/240/R-02/009. December 2002.
[29] See: https://www.nemi.gov/home/. Accessed June 24, 2024.
[30] USEPA. 1994a. Method 200.7 – Determination of Metals and Trace Elements in Water and Wastes by Inductively Coupled Plasma-Atomic Emission Spectrometry. Revision 4.4. United States Environmental Protection Agency, Office of Research and Development, Environmental Monitoring Systems Laboratory, Cincinnati, OH.
[31] USEPA. 1994b. Method 200.8 – Determination of Trace Elements in Waters and Wastes by Inductively Coupled Plasma – Mass Spectrometry. Revision 5.4. United States Environmental Protection Agency, Office of Research and Development, Environmental Monitoring Systems Laboratory, Cincinnati, OH.

Spectrometry).[32] The analytical method is an important element of a field investigation to generate defensible data. Similarly, the hold time for the analysis of a particular analyte in a sample is often important.[33] Depending on the analysis and media, analytical methods have varying hold times. For example, USEPA methods for lead in water, either total or dissolved, have a hold time of 180 days since sample collection when preserved with nitric acid to a pH < 2.[34,35,36]

3.5.3 Reporting

Field investigation reports are documents written to memorialize the data collection effort. The USEPA has general guidance for reporting on investigations which follow the "IMRAD" format: Introduction, Methods, Results, and Discussion.[37] The introduction provides the reader with context for the rest of the report. The methods section provides an understanding of how the evaluation was conducted. The results section describes the investigation's findings. The discussion section provides the reader with the investigator's interpretation of the results and their implications. The report may contain tables, charts, or figures that provide the reader information, such as a summary of the data or a map of sample collection locations. Ultimately, the reporting should bring together the key elements of the field investigation for ease of understanding the procedures followed, data generated, and interpretation of results.

[32] USEPA. 2014b. Method 6020B – Inductively Coupled Plasma – Mass Spectrometry. Revision 2. United States Environmental Protection Agency, Washington, DC.
[33] The hold time is the period between sample collection and sample preparation (USEPA 2015).
[34] USEPA. 1994a. Method 200.7 – Determination of Metals and Trace Elements in Water and Wastes by Inductively Coupled Plasma-Atomic Emission Spectrometry. Revision 4.4. United States Environmental Protection Agency, Office of Research and Development, Environmental Monitoring Systems Laboratory, Cincinnati, OH.
[35] USEPA. 1994b. Method 200.8 – Determination of Trace Elements in Waters and Wastes by Inductively Coupled Plasma – Mass Spectrometry. Revision 5.4. United States Environmental Protection Agency, Office of Research and Development, Environmental Monitoring Systems Laboratory, Cincinnati, OH.
[36] USEPA. 2014b. Method 6020B – Inductively Coupled Plasma – Mass Spectrometry. Revision 2. United States Environmental Protection Agency, Washington, DC.
[37] USEPA. 2005. Report Formatting and Presentation Guidelines. United States Environmental Protection Agency, Evaluation Support Division. March 24, 2005.

4. OPINIONS

4.1 Opinion 1: AT&T's water and sediment investigations were implemented appropriately to generate valid data which concluded that Lake Tahoe water quality is not being adversely impacted by the presence of the cables.

AT&T engaged two consultants, Haley & Aldrich and Ramboll, to sample surface water (Haley & Aldrich and Ramboll) and sediment (Ramboll) in Lake Tahoe for the purposes of evaluating water and sediment quality in the vicinity of two lead-clad cables (Cables A and B; Figure 1). Haley & Aldrich conducted water sampling in March 2021 and Ramboll conducted water and sediment sampling in June and July, 2023, respectively. I reviewed the investigation planning and implementation documentation provided to me for these three sampling events. In my opinion, the investigations were appropriately designed and implemented and reported to determine whether Lake Tahoe water and sediment was being adversely impacted by the presence of the two cables, and the data reported in these investigations were acquired appropriately with clear and reproducible methodologies. These data are representative of conditions close to the cables and in reference areas of Lake Tahoe. Ultimately, the investigations found little to no detectable levels of lead in water or sediment around the cables.

4.1.1 AT&T's consultants conducted a thorough visual survey of the cables and their surroundings to identify appropriate locations for sampling water and sediment next to the cable and in reference areas away from the cables.

Before initiating sampling activities, both of AT&T's consultants conducted a thorough visual survey of the cables in order to identify appropriate locations for sampling.[38,39] Survey of the cables included observation of the cable length using a remote-piloted underwater drone or GoPro camera,[40,41] and visual inspection (and photography),[42] which allowed personnel to determine the paths of the cables and evaluate their condition at multiple locations and to enable remobilization to any sampling location, as needed.

Haley & Aldrich noted that of 18 locations surveyed along the two cables, 16 locations appeared "visually competent with the outer jute-bitumen layer intact," indicating that the majority of the lead sheathing around the cables is not exposed to the water.[43] They targeted their water sampling locations next to the cables in areas of exposed lead, thereby providing a more conservative assessment of potential contamination to the surrounding water.[44] Ramboll also selected representative areas along the cables for their sampling effort. Water sample locations were chosen in the same locations as the prior Haley & Aldrich sampling for temporal comparison.[45] Sediment sample locations were chosen in areas where the cable was exposed on the lake bottom and in areas where

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[38] Haley and Aldrich 2024. Supplemental Report on Lake Tahoe Field Sampling and Analysis of Impacts of Legacy Telecommunications Cables on Water Quality, South Lake Tahoe, California. June 2024. At p. 7 of 131.
[39] Ramboll 2023a. Lake Tahoe Water Lead Study, Lake Tahoe, California. August 3 2023. P1880_CP086_000000018.
[40] Haley and Aldrich 2024. Supplemental Report on Lake Tahoe Field Sampling and Analysis of Impacts of Legacy Telecommunications Cables on Water Quality, South Lake Tahoe, California. June 2024. At p. 7 of 131.
[41] Ramboll 2023a. Lake Tahoe Water Lead Study, Lake Tahoe, California. August 3 2023. P1880_CP086_000000018 at p. 5.
[42] Ramboll 2023c. Sampling and Analysis Plan, Lake Tahoe – Sediment Samples. July 2023. At p. 5 of 18.
[43] Haley and Aldrich 2024. Supplemental Report on Lake Tahoe Field Sampling and Analysis of Impacts of Legacy Telecommunications Cables on Water Quality, South Lake Tahoe, California. June 2024. At p. 13 of 131.
[44] Haley and Aldrich 2024. Supplemental Report on Lake Tahoe Field Sampling and Analysis of Impacts of Legacy Telecommunications Cables on Water Quality, South Lake Tahoe, California. June 2024. At p. 7 of 131.
[45] Ramboll 2023a. Lake Tahoe Water Lead Study, Lake Tahoe, California. August 3 2023. P1880_CP086_000000018 at p. 4 of 39.

the cable cladding was exposed, both directly next to the cable and at defined distances away from the cable.[46]

In a field investigation it is important to establish appropriate reference and/or background sampling locations in order to evaluate whether a hypothesized contaminant source is contributing to elevated concentrations.[47] Both of AT&T's consultants identified and documented suitable reference/experimental control sampling areas based on desktop and visual reconnaissance. Haley & Aldrich collected "comparison" samples in locations approximately 100 feet (ft) and 600 ft from the Cable A-proximal sampling station and reference (or background) samples approximately 3.5 miles from the cable sampling stations.[48] These comparison/control locations were sampled at the same height above sediment as the cable stations "to account for water-sediment interactions that may affect water lead concentrations."[49] Ramboll similarly collected samples in reference areas. Water samples were collected at the same reference stations previously sampled by Haley & Aldrich as well as three additional reference locations.[50] Sediment samples were collected at three of the same reference locations targeted for water sampling and also included four beach stations away from the cables.[51]

4.1.2 AT&T's consultants used appropriate and reproducible methods to sample and characterize surface water and sediment in their Lake Tahoe investigations.

AT&T's consultants implemented their respective field investigations in Lake Tahoe following a SAP (Ramboll) or FSP (Haley & Aldrich).[52,53,54] Following their investigations, both consultants reported their results, methodologies, and conclusions in reports.[55,56,57] The documents provide descriptions of the investigation objectives which in this case was to measure potential ambient lead concentrations in water and sediments both near and distant from the cables. The documents also present the proposed procedures to be used in the field for collection of water and/or sediment samples and provide a detailed description of sampling locations for remobilization as needed. The Ramboll SAPs described comprehensive quality assurance/quality control procedures to confirm that samples follow the correct chain of custody from collection through analysis.

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[46] Ramboll 2023b. Lake Tahoe Sediment Lead Study, Lake Tahoe, California. August 24 2023. ATT_000021909 at 21914, 21917.
[47] Murphy, B.L. and Morrison, R.D. 2015. Introduction to Environmental Forensics, Third Edition. Academic Press, Oxford, GB.
[48] Haley and Aldrich 2024. Supplemental Report on Lake Tahoe Field Sampling and Analysis of Impacts of Legacy Telecommunications Cables on Water Quality, South Lake Tahoe, California. June 2024. At p. 10 of 131.
[49] Haley and Aldrich 2024. Supplemental Report on Lake Tahoe Field Sampling and Analysis of Impacts of Legacy Telecommunications Cables on Water Quality, South Lake Tahoe, California. June 2024. At p. 10 of 131.
[50] Ramboll 2023a. Lake Tahoe Water Lead Study, Lake Tahoe, California. August 3 2023. P1880_CP086_000000018 at p. 4 of 39.
[51] Ramboll 2023b. Lake Tahoe Sediment Lead Study, Lake Tahoe, California. August 24 2023. ATT_000021909 at 21915, 21917.
[52] I reviewed a Haley & Aldrich draft sampling plan memorandum dated March 12, 2021 that described the proposed sampling plan, objectives, sampling locations, and targeted analytes for the surface water samples. I did not review a QAPP.
[53] Ramboll 2023d. Sampling and Analysis Plan, Lake Tahoe – Water Samples. June 2023. P1880_CP153_000000025 at p. 1 through 18.
[54] Ramboll 2023c. Sampling and Analysis Plan, Lake Tahoe – Sediment Samples. July 2023. At p. 1 through 18.
[55] Haley and Aldrich 2024. Supplemental Report on Lake Tahoe Field Sampling and Analysis of Impacts of Legacy Telecommunications Cables on Water Quality, South Lake Tahoe, California. June 2024.
[56] Ramboll 2023a. Lake Tahoe Water Lead Study, Lake Tahoe, California. August 3 2023. P1880_CP086_000000018.
[57] Ramboll 2023b. Lake Tahoe Sediment Lead Study, Lake Tahoe, California. August 24 2023. ATT_000021909.

Ramboll's water samples were analyzed by ALS-Kelso using USEPA Method 6020B[58] and Haley & Aldrich's water samples were analyzed by Pace Analytical using USEPA Method 200.8,[59] both of which use inductively coupled plasma-mass spectrometry. In order to analyze for presence of dissolved lead in water, Method 6020B requires samples to first be filtered, but does not prescribe that filtering must be performed in the field at the time of sampling. Ramboll elected to send unfiltered samples to the laboratory for filtering prior to analysis. ALS Kelso conducted this filtering consistent with their sample filtration standard operating procedure.[60] Haley & Aldrich filtered their water samples in the field prior to preservation and shipment to Pace Analytical.[61] All three investigation reports included sections describing data validation or data usability that followed USEPA guidelines.

4.1.3 Results of AT&T's investigations in Lake Tahoe demonstrate lead levels in water and sediment around the cables are similar to background levels and many times lower than the drinking water action level.

As detailed in the sections above, AT&T's consultants collected water and sediment samples in a manner that is both defensible and reproducible by others. Results of these investigations showed that water quality in Lake Tahoe is not being adversely impacted by the presence of the cables.[62,63,64] Both water and sediment sample lead results were comparable to reference sampling locations or available background data from Lake Tahoe.

4.1.3.1 Water Samples

Haley & Aldrich's 2021 water sampling and Ramboll's 2023 water sampling used similar sample collection methods and equipment. Both investigations found that dissolved and total lead concentrations were either not detected or comparable to the range of established background for Lake Tahoe (0.003 – 0.058 µg/L) as reported by Chien et al. (2019).[65] The highest lead concentration measured from the Haley & Aldrich samples was an estimated value of 0.08 µg/L (dissolved lead)[66] and from the Ramboll samples was an estimated value of 0.064 µg/L (total lead).[67] In each study, lead concentrations were orders of magnitude lower than the USEPA's established drinking water action level of 15 µg/L.[68]

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[58] ALS Environmental – Kelso 2023. Determination of Metals and Trace Elements by Inductively Coupled Plasma-Mass Spectrometry. Effective February 1, 2023. ATT_000022336.

[59] Haley and Aldrich 2024. Supplemental Report on Lake Tahoe Field Sampling and Analysis of Impacts of Legacy Telecommunications Cables on Water Quality, South Lake Tahoe, California. June 2024. At p. 55 of 131.

[60] ALS 2020. Standard Operating Procedure. Sample Filtration for Metals Analysis. Effective June 31, 2020. ALS Environmental – Kelso. ATT_000022388.

[61] Haley and Aldrich 2024. Supplemental Report on Lake Tahoe Field Sampling and Analysis of Impacts of Legacy Telecommunications Cables on Water Quality, South Lake Tahoe, California. June 2024. At p. 11 of 131.

[62] Haley and Aldrich 2024. Supplemental Report on Lake Tahoe Field Sampling and Analysis of Impacts of Legacy Telecommunications Cables on Water Quality, South Lake Tahoe, California. June 2024. At p. 16 of 131.

[63] Ramboll 2023a. Lake Tahoe Water Lead Study, Lake Tahoe, California. August 3 2023. P1880_CP086_000000018 at p. 16 of 39.

[64] Ramboll 2023b. Lake Tahoe Sediment Lead Study, Lake Tahoe, California. August 24 2023. ATT_000021909 at 21932.

[65] Chien, C., Allen, B., Dimova, N.T., Yang, J., Reuter, J., Schladow, G., and Paytan, A. 2019. Evaluation of atmospheric dry deposition as a source of nutrients and trace metals in lake Tahoe. Chemical Geology (511) 178-189.

[66] Haley and Aldrich 2024. Supplemental Report on Lake Tahoe Field Sampling and Analysis of Impacts of Legacy Telecommunications Cables on Water Quality, South Lake Tahoe, California. June 2024. At p. 16 of 131.

[67] Ramboll 2023a. Lake Tahoe Water Lead Study, Lake Tahoe, California. August 3 2023. P1880_CP086_000000018 at p. 7 of 39.

[68] See: https://www.epa.gov/ground-water-and-drinking-water/basic-information-about-lead-drinking-water. Accessed June 25, 2024.

4.1.3.2 Sediment Samples

Similar to the water studies, Ramboll's sediment investigation found low levels of lead in sediment. All measured lead concentrations were less than 10 mg/kg and within the same general range, regardless of whether they were collected near the cables or in references areas. Furthermore, they were below reported background levels. The National Oceanic and Atmospheric Administration reported background lead concentrations in freshwater sediments of 4 to 17 mg/kg.[69] The highest lead concentration measured during Ramboll's sediment sampling investigation in Lake Tahoe was 7.57 mg/kg which is well within the established background range.[70]

It is clear to me, based on my review of the water and sediment study reports, that lead concentrations in Lake Tahoe water and sediments have not been adversely impacted by the presence of the lead cables. Sampling was conservatively focused towards those areas of the cables that might present the most significant potential lead exposure and even so, lead concentrations were in the range of background and well below federal and state regulatory limits.

4.2 Opinion 2: CSPA's lead cable leaching experiments are insufficiently documented and supported to show the conditions they simulated are representative of the conditions in Lake Tahoe.

CSPA alleges that the two telecom cables in Lake Tahoe leach lead and adversely impact water quality in Lake Tahoe.[71] CSPA supports these allegations through two simple and poorly-documented experiments, as described below, in which it submerged a portion of cable in a container of water. I have attempted to account for how these experiments were designed and implemented and how the data were generated through my review of documents produced in this matter. A summary of those experiments and uncertainties in how that data was generated is provided below. Pertinent experimental design and reporting information is missing, and therefore I cannot conclude that this experiment was representative of actual conditions for lead-clad cable in Lake Tahoe and as such should not be relied upon to support an allegation that the cables are adversely impacting Lake Tahoe water quality.

4.2.1 December 2018 Cable Dissection

In December 2018, for purposes of evaluating its composition, MTS dissected a piece of telecom cable that they claim was previously submerged in Lake Tahoe. In a letter to the Tahoe Resources Conservation District, MTS reported that the cable contained 0.71 pounds per foot (lb/ft) of petroleum-based, tar-impregnated fiber or twine, 4.15 lb/ft of steel, 3.39 lb/ft of lead, 0.21 lb/ft of paper, 0.01 lb/ft of string, and 0.77 lb/ft of copper.[72] I found no information on where or how the cable section was collected. It does not appear that MTS collected any environmental sampling data or analytical testing of the cable during this investigation.

4.2.2 June 2020 Lead Leaching Experiment

In June 2020, the Mateel Environmental Law Foundation (Mateel) apparently submerged a 40-cm piece of one of the telecom cables from Lake Tahoe in a plastic container of "Lake Tahoe water" for

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[69] Buchman, M.F. 2008. Screening Quick Reference Tables (SQuiRTs). National Oceanic and Atmospheric Administration (NOAA). Available at: https://repository.library.noaa.gov/view/noaa/9327. Accessed June 25, 2024.
[70] Ramboll 2023b. Lake Tahoe Sediment Lead Study, Lake Tahoe, California. August 24 2023. ATT_000021909 at 21932.
[71] Second Amended Complaint for Declaratory and Injunctive Relief and Civil Penalties. California Sportfishing Protection Alliance v. Pacific Bell Telephone Company.
[72] MTS. 2018. Derelict Submerged Cable in Lake Tahoe. Marine Taxonomic Services Ltd. December 19, 2024. BTBMTS0015770-BTBMTS0015774.

seven days.[73,74] According to the complaint and email correspondence, results of that experiment indicated the lead concentration in the water was 650 µg/L after the cable was submerged for one day and 1,500 µg/L after one week. [75,76] These results appear to be supported by a laboratory report from Enthalpy Analytical dated July 13, 2020 which lists results for three water samples analyzed for lead – one "blank" sample collected on June 4, 2020 and two "Pb" samples collected on June 5, 2020 and June 12, 2020, respectively.[77] The laboratory used USEPA Method 3010A as a sample preparation method and USEPA Method 6010B as an analytical method for lead. According to the lab report a water sample was also collected for analysis of polycyclic aromatic hydrocarbons (PAHs) on June 17, 2020.[78] Results of this testing indicated that all but two PAHs were non-detect; fluoranthene was detected at 5.8 µg/L and phenanthrene was detected at 12 µg/L.

I have not been provided with any other information including reports, correspondence, or otherwise informative material to understand how the experiment was designed, how it was implemented, or how the results were considered relevant in context to the investigation's objectives. Pertinent experimental design information such as water chemistry, temperature, and cable conditions were not described in the documents I reviewed. Therefore, I cannot conclude that this experiment was representative of actual conditions for lead-clad cable in Lake Tahoe.

4.2.3 August 2020 Lead Leaching Experiment

Following the June 2020 cable leaching experiment, in August 2020 Mateel apparently capped "the ends of the piece of '1929 telecom cable' with paraffin…and placed it in water to look more closely at lead leaching through the outer layers of the cable."[79] It is unclear if this is the same piece of cable previously soaked in the container in the June 2020 experiment. However, it suggests that the June 2020 experiments used a freshly-cut cable section which may have exposed portions of the cable's lead-cladding that would not otherwise be in contact with Lake Tahoe water. A laboratory report from Enthalpy Analytical dated September 2, 2020 reports the receipt of one water sample from Mateel, identified as "Tahoe – Capped" collected on August 25, 2020.[80] The laboratory used USEPA Method 3010A as a sample preparation method and USEPA Method 6010B as an analytical method for lead and the result of the "Tahoe – Capped" sample was 0.029 mg/L (which is equivalent to 29 µg/L). No blanks or other QA/QC samples appear to have been collected during this experiment.

I have not been provided with any other information such as reports, correspondence, or otherwise informative material to understand how the experiment was designed, how it was implemented, or how the results were considered relevant in context to the investigation's objectives. Therefore, I cannot conclude that this experiment was representative of actual conditions for lead-clad cable in Lake Tahoe.

4.3 Opinion 3: CSPA's proposed field investigation documentation lacks sufficient detail to assess the scope of the proposed sampling.

In January 2024, CSPA filed a declaration to the court describing additional field investigations they planned to conduct in Lake Tahoe. According to the declaration, the proposed investigation was "aimed at determining whether there are elevated lead concentrations in water and sediment near the

[73] Williams, D. 2020. Email to Seth Jones and Monique Rydel-Fortner re: Attorney Communication – Status Updates; Test Results. July 16. BTBMTS0024692
[74] Second Amended Complaint for Declaratory and Injunctive Relief and Civil Penalties. California Sportfishing Protection Alliance v. Pacific Bell Telephone Company. Paragraph 7.
[75] Williams, D. 2020. Email to Seth Jones and Monique Rydel-Fortner re: Attorney Communication – Status Updates; Test Results. July 16. BTBMTS0024692
[76] Second Amended Complaint for Declaratory and Injunctive Relief and Civil Penalties. California Sportfishing Protection Alliance v. Pacific Bell Telephone Company. Paragraph 7.
[77] Enthalpy Analytical. 2020a. Analytical Report. July 13, 2020. BTBMTS0024694.
[78] Enthalpy Analytical. 2020a. Analytical Report. July 13, 2020. BTBMTS0024694 at 24701.
[79] Boyd, K. 2020. Personal Communication. August 21, 2020. BTBMTS0024761.
[80] Enthalpy Analytical. 2020b. Analytical Report. September 2, 2020.

submerged cables and whether the biota and biology of the lake are affected by the accumulation of lead or other metals from the cables."[81] Appended to the CSPA Declaration was a QAPP and a SAP describing "Water, Sediment, Biofilm, and Biota Sampling in Lake Tahoe, California."[82]

I understand from counsel that CSPA has already implemented this field investigation. Other than the CSPA Declaration and its appended QAPP and SAP, I have not been provided with any other information related to this field investigation which may be pertinent to evaluating its technical merits, which may include, but are not limited to, a field investigation summary report, maps, laboratory reports, electronic laboratory data, chains of custody, a data validation report, or field notes.

In my review of the CSPA Declaration I sought to understand several key elements of the proposed field investigation for its reproducibility. Each of these elements were considered to answer this important question: would qualified personnel be able to replicate this field investigation using the QAPP and SAP provided by CSPA? I conclude below that the answer is no.

4.3.1 The QAPP and SAP lack sufficient detail to understand how biota will be sampled.

The CSPA Declaration states "the QAPP and SAP were designed to guide the process of collecting and analyzing water, algal and bacteria (also known as biofilm), biota and sediment samples, each with separate collection techniques."[83] In the QAPP Section 3.1 "Decisions or outcomes" a primary question to be answered includes "is the biota or the biology of the lake (e.g., biofilms, invertebrates and fishes) inhabiting waters around the submerged telecommunications cables accumulating lead or other metals?"[84] Notably, the QAPP and SAP do not provide sufficient detail to understand how biota will be sampled, the parameters for which the biota will be analyzed, or the analytical methods to be used for the biota samples.

In the QAPP, Table 7 "Sampling Parameters, Handling and Hold Times" lists analytical parameters, container types and sample volume, and preservation techniques only for water and sediment samples, not biota. Similarly, Table 8 "Analytical Methods" lists analytical methods for lead in water and sediment samples and total hardness in water samples.[85] Biota is not included in these tables, yet the potential biota accumulation of lead or other metals is stated as a fundamental question to be answered by the field investigation.

The SAP, included as Appendix A to the QAPP, is titled "Manual Water and Sediment Sample Collection & Field Data Collection" and is intended to detail the protocols used to collect samples during the field investigation.[86] The SAP makes two passing references to the collection of biota samples, but does not describe the sampling methodology. In the first, the authors state the "procedures for the collection and storage of sediment and bio-film samples are based on the EPA technical manual EPA-823-B-01-

[81] CSPA. 2024. Second Supplemental Declaration of Matthew C. Maclear in Support of Plaintiff's Motion to Amend Scheduling Order. California Sportfishing Protection Alliance v. Pacific Bell Telephone Company. United States District Court Eastern District of California. Case No. 2:21-cv-00073-JDP. January 25, 2024. At p. 5.
[82] CSPA. 2024. Second Supplemental Declaration of Matthew C. Maclear in Support of Plaintiff's Motion to Amend Scheduling Order. California Sportfishing Protection Alliance v. Pacific Bell Telephone Company. United States District Court Eastern District of California. Case No. 2:21-cv-00073-JDP. January 25, 2024. At p. 23.
[83] CSPA. 2024. Second Supplemental Declaration of Matthew C. Maclear in Support of Plaintiff's Motion to Amend Scheduling Order. California Sportfishing Protection Alliance v. Pacific Bell Telephone Company. United States District Court Eastern District of California. Case No. 2:21-cv-00073-JDP. January 25, 2024. At p. 4-5
[84] CSPA. 2024. Second Supplemental Declaration of Matthew C. Maclear in Support of Plaintiff's Motion to Amend Scheduling Order. California Sportfishing Protection Alliance v. Pacific Bell Telephone Company. United States District Court Eastern District of California. Case No. 2:21-cv-00073-JDP. January 25, 2024. At p. 28.
[85] CSPA. 2024. Second Supplemental Declaration of Matthew C. Maclear in Support of Plaintiff's Motion to Amend Scheduling Order. California Sportfishing Protection Alliance v. Pacific Bell Telephone Company. United States District Court Eastern District of California. Case No. 2:21-cv-00073-JDP. January 25, 2024. At p. 37
[86] CSPA. 2024. Second Supplemental Declaration of Matthew C. Maclear in Support of Plaintiff's Motion to Amend Scheduling Order. California Sportfishing Protection Alliance v. Pacific Bell Telephone Company. United States District Court Eastern District of California. Case No. 2:21-cv-00073-JDP. January 25, 2024. At p. 41.

002."[87] I reviewed this EPA technical guidance document and found that it does not describe procedures for the collection and storage of biofilm or any other biota sample. In fact, the foreword of the report states "the methods described in this Manual are intended to provide the user with sediment collection, storage, and manipulation methods that are most likely to yield accurate, representative sediment quality data (e.g., toxicity, chemical) based on the experience of many monitoring programs and researchers."[88] It is a sediment sampling guidance document and not a biota sampling guidance; reliance on it by the CSPA in the SAP is inappropriate for sampling of biofilm or other biota.

The second passing reference to biota sample collection and analysis in the SAP is at the end of Section 3(e) Sample Collection Methods for Pb in Sediment. In sub-bullet 10, the reader is referred to Section 3 of the QAPP and Appendix C of the QAPP for methods for the collection and preservation of algae and biota.[89] Section 3 of the QAPP does not sufficiently describe sampling methodology for biota, other than fish being collected in a "baited minnow trap overnight near the cable and away from the cable in similar locations where water and sediment samples are collected."[90] Similarly, Attachment C of the SAP is a peer-reviewed journal article describing a sampling syringe with a brush attachment to detach periphyton from an underwater substrate.[91] This article was attached to the QAPP with no supporting information on how it would be implemented in the Lake Tahoe field investigation. Furthermore, neither Section 3 of the QAPP nor Attachment C describe methods for preservation or analysis of the samples for lead or other metals analysis. Crucial details such as the number of samples, sampling containers, location of samples, analytical methodologies, and the like are not included in the QAPP or SAP.

4.3.2 The QAPP omits sampling, analytical, or data interpretation methodologies for certain analytes and sample types.

4.3.2.1 Total Hardness

As part of a QAPP or a SAP, the analytical method to be used for the particular analyte and sample type are needed to acquire appropriate data. The QAPP and SAP attached to the CSPA declaration list analytical methodologies to be used for water and sediment samples in Table 8.[92] Here, the analyte Total Hardness is listed as being analyzed via analytical method "200.7". Though the QAPP does not list a citation for "200.7", I assume it is referring to USEPA Method 200.7. USEPA Method 200.7 is an analytical method for metals in water and waste.[93] Specifically, it is applicable to the analysis of 32 metals. It is not, however, a method to measure Total Hardness. According to NEMI, eight analytical

[87] CSPA. 2024. Second Supplemental Declaration of Matthew C. Maclear in Support of Plaintiff's Motion to Amend Scheduling Order. California Sportfishing Protection Alliance v. Pacific Bell Telephone Company. United States District Court Eastern District of California. Case No. 2:21-cv-00073-JDP. January 25, 2024. At p. 41.
[88] USEPA. 2001. Method for Collection, Storage, and Manipulation of Sediments for Chemical and Toxicological Analyses: Technical Manual. EPA 823-B-01-002. U.S. Environmental Protection Agency, Office of Water, Washington, DC. At p. ix.
[89] CSPA. 2024. Second Supplemental Declaration of Matthew C. Maclear in Support of Plaintiff's Motion to Amend Scheduling Order. California Sportfishing Protection Alliance v. Pacific Bell Telephone Company. United States District Court Eastern District of California. Case No. 2:21-cv-00073-JDP. January 25, 2024. At p. 45.
[90] CSPA. 2024. Second Supplemental Declaration of Matthew C. Maclear in Support of Plaintiff's Motion to Amend Scheduling Order. California Sportfishing Protection Alliance v. Pacific Bell Telephone Company. United States District Court Eastern District of California. Case No. 2:21-cv-00073-JDP. January 25, 2024. At p. 29.
[91] CSPA. 2024. Second Supplemental Declaration of Matthew C. Maclear in Support of Plaintiff's Motion to Amend Scheduling Order. California Sportfishing Protection Alliance v. Pacific Bell Telephone Company. United States District Court Eastern District of California. Case No. 2:21-cv-00073-JDP. January 25, 2024. At p. 71.
[92] CSPA. 2024. Second Supplemental Declaration of Matthew C. Maclear in Support of Plaintiff's Motion to Amend Scheduling Order. California Sportfishing Protection Alliance v. Pacific Bell Telephone Company. United States District Court Eastern District of California. Case No. 2:21-cv-00073-JDP. January 25, 2024. At p. 38.
[93] USEPA. 1994a. Method 200.7: Determination of Metals and Trace Elements in Water and Wastes by Inductively Coupled Plasma-Atomic Emission Spectrometry. Revision 4.4. United States Environmental Protection Agency, Office of Research and Development, Environmental Monitoring Systems Laboratory. Cincinnati, OH.

methods are applicable to measuring Total Hardness.[94] Two of these are USEPA methods for Total Hardness (USEPA Method 130.1 and 130.2). Notably, NEMI does not list USEPA Method 200.7 as a method for measuring Total Hardness.

Water hardness is a measure of the amount of dissolved calcium and magnesium in water.[95] It can be determined based on a calculation if the concentration of both calcium and magnesium are measured in a water sample, per Standard Methods 2340B.[96] That is, separate measurements of calcium and magnesium are required. In the CSPA Declaration QAPP, calcium and magnesium are not specified as analytical parameters. It is unclear how CSPA plans to make a Total Hardness determination in its field investigation.

4.3.2.2 Polycyclic Aromatic Hydrocarbons (PAHs)

In the CSPA Declaration QAPP, Section 3(e) Sample Collection Methods for Pb in Sediment states that samples will be collected in amber glass jars for analysis of lead and polycyclic aromatic hydrocarbons (PAHs).[97] This statement is the first reference to CSPA planning to collect and analyze samples for PAHs. At no other point in the QAPP does it describe the data quality objectives, analytical parameters, or analytical methods for PAHs in this proposed field investigation. Table 3 Summary of Sampling Procedures does not list PAHs as a sampling parameter. Table 7 – Sampling Parameters, Handling and Hold Times does not list PAHs as a parameter for analysis. Table 8 – Analytical Methods does not list a method for the analysis of PAHs in water or sediment. I understand that CSPA previously sampled water for PAHs from a container where a piece of cable was submerged.[98] Therefore, it is reasonable to assume that that the plaintiff's inclusion of PAHs in Section 3(e) of the QAPP is not a typo but could be a target analyte in their field investigation. However, the QAPP and SAP are lacking sufficient detail to replicate any sampling and analysis for PAHs.

4.3.3 The QAPP is inconsistent in describing where samples will be analyzed.

A necessary element of a QAPP and/or a SAP is identifying the laboratory that will receive and analyze the samples collected during a field investigation. The CSPA Declaration QAPP identifies four contract laboratories which are "responsible for generating analytical data" and lists them in Table 2 Contract Lab Contacts.[99] Two of these contacts are from commercial contract laboratories, Caltest Analytical Laboratory in Napa, CA and Eurofins-Tustin in Tustin, CA, while the other two are university professors

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[94] NEMI. 2024. Results for Total Hardness. Available at: https://www.nemi.gov/methods/analyte_results/?media_name=&source=&instrumentation=&analyte_name=total+hardness&category=. Accessed June 19, 2024.

[95] See https://www.usgs.gov/special-topics/water-science-school/science/hardness-water. Accessed June 19, 2024.

[96] The calculation per Standard Methods 2340B is as follows: Hardness, mg equivalent $CaCO_3$/L = 2.497 [Ca, mg/L] + 4.118 [Mg, mg/L]. (Standard Methods. 2017. Standard Methods For the Examination of Water and Wastewater, 23rd Edition. Method 2340 Hardness).

[97] CSPA. 2024. Second Supplemental Declaration of Matthew C. Maclear in Support of Plaintiff's Motion to Amend Scheduling Order. California Sportfishing Protection Alliance v. Pacific Bell Telephone Company. United States District Court Eastern District of California. Case No. 2:21-cv-00073-JDP. January 25, 2024. At p. 45.

[98] My understanding is based on the complaint which stated that a piece of cable was submerged in a plastic container and the resulting water lead concentration was 650 ug/L and 1,500 ug/L after subsequent sampling (Second Amended Complaint for Declaratory and Injunctive Relief and Civil Penalties. California Sportfishing Protection Alliance v. Pacific Bell Telephone Company. Paragraph 7). A laboratory report from Enthalpy Analytical dated July 13, 2020 lists two water samples for lead with the same concentrations reported in the Complaint (Enthalpy Analytical. 2020a. CSPA000002 at 008). The lab report also indicates a water sample was analyzed for PAHs (Enthalpy Analytical. 2020a. CSPA000002 at 009). This was corroborated in an email from David Williams to Seth Jones and Monique Rydel-Fortner from July 16, 2020 where he stated, "I was surprised to not find more polycyclic aromatic hydrocarbons (PAHs) and it may be worth looking at that with more tests." (Williams, D. 2020. Email to Seth Jones and Monique Rydel-Fortner re: Attorney Communication – Status Updates ; Test Results. July 16. BTBMTS0024692).

[99] CSPA. 2024. Second Supplemental Declaration of Matthew C. Maclear in Support of Plaintiff's Motion to Amend Scheduling Order. California Sportfishing Protection Alliance v. Pacific Bell Telephone Company. United States District Court Eastern District of California. Case No. 2:21-cv-00073-JDP. January 25, 2024. At p. 27.

at University of Nevada, Reno and University of Arizona. Though these four laboratories are identified in the beginning of the QAPP, none of them are referenced later in the QAPP or SAP. In fact, an entirely different laboratory, California Laboratory Services in Rancho Cordova, CA, is identified multiple times in the QAPP as receiving the water and sediment samples.[100] This inconsistency does not conform with the CSPA Declaration's own QAPP.[101]

4.4 Opinion 4: MTS' prior field investigations in Lake Tahoe do not demonstrate an adverse impact to Lake Tahoe water quality resulting from the cables.

MTS conducted multiple field investigations in Lake Tahoe to collect water and sediment samples for analysis of lead. Details and results of these investigations were poorly reported. As described below, in some instances only laboratory reports and limited email correspondence were available that provided any information on the Lake Tahoe investigations. The investigations lacked pre-planning information such as a SAP, QAPP, or FSP, did not collect adequate QA/QC samples, did not report the implementation and results of the investigation following an IMRAD format, or in many instances did not even indicate where samples were collected. MTS' investigations do not clearly demonstrate an adverse impact to Lake Tahoe water quality resulting from the cables. Furthermore, as described in Section 4.4.2, MTS itself acknowledged that these data were not analyzed in a manner to determine the source of the lead.

4.4.1 May 2022 Lake Tahoe Water and Sediment Sampling

On May 22, 2022, MTS collected 10 water samples and one sediment sample from Lake Tahoe. I reviewed two laboratory reports from EHS Laboratories with results of 10 water samples and one sediment sample which were all tested for lead, arsenic, and cadmium.[102,103] The lab reports do not list the analytical method used for these sample analyses nor do they indicate whether the water samples were analyzed for total lead or dissolved lead. Results indicate that six of the 10 water samples had detectable concentrations of lead ranging from 0.15 mg/L to 2.0 mg/L (i.e., 150 µg/L to 2,000 µg/L).[104] The sediment sample contained 8.4 mg/kg of lead.[105]

I requested all available information related to this field investigation that may help contextualize the results or assess whether the cables are a source of lead to Lake Tahoe. Little information was available. First, no information on the sampling locations was provided. I do not know which samples, if any, were collected next to lead-clad cables or which samples were collected in the sampling protocol. Furthermore, no blanks or other QA/QC samples appear to have been collected in this investigation to help assess the validity of the data. Other than the email correspondence with a few sentences on the proposed sampling protocol, I have not been provided with any information such as reports, correspondence, or otherwise informative material to understand how the sampling was implemented, how the samples were handled, whether the data were accepted as valid, or other pertinent information to assess the investigation in more detail. In my opinion, this investigation does not support a conclusion that the cables are a source of lead to Lake Tahoe.

[100] CSPA. 2024. Second Supplemental Declaration of Matthew C. Maclear in Support of Plaintiff's Motion to Amend Scheduling Order. California Sportfishing Protection Alliance v. Pacific Bell Telephone Company. United States District Court Eastern District of California. Case No. 2:21-cv-00073-JDP. January 25, 2024. At pp. 30, 41, 45, 47.
[101] See Footnote 2 of the CSPA Declaration QAPP which states "Analytical services may also be conducted at other appropriate laboratories certified by ELAP. Any changes in the choice of laboratory will be duly updated in this Quality Assurance Project Plan/Sampling and Analysis Plan (QAPP/SAP)."
[102] EHS Laboratories. 2022a. Analytical Report. June 15, 2022. EHS000063.
[103] EHS Laboratories. 2022b. Analytical Report. June 15, 2022. EHS000083.
[104] EHS Laboratories. 2022a. Analytical Report. June 15, 2022. EHS000063 at 65.
[105] EHS Laboratories. 2022b. Analytical Report. June 15, 2022. EHS000083.

4.4.2 March and May 2023 Lake Tahoe Water and Sediment Sampling

In March and May 2023, MTS conducted two field investigations in Lake Tahoe on behalf of the Environmental Defense Fund (EDF).[106] According to a summary report on the investigation methodology, the project goal was to "document the presence and condition of lead sheathed cables" and to collect samples of water and sediment "within and adjacent to water bodies where lead-containing cables were identified."[107] Additionally, MTS acknowledged that when samples were collected it was "to determine the current level of lead in areas adjacent to cables" but that "these data were not analyzed by MTS in a manner to determine the source of the lead."[108]

The sampling methodology described in the summary report stated that water samples were collected with syringes, and if the sample was collected in proximity to a cable, it was collected one centimeter from the cable.[109] Sediment samples were collected with a stainless steel scoop "at locations touching and up to 15 centimeters away from the cable and at various locations away from the cable."[110] The methodology did not describe sample preservation or handling techniques, such as filtering or acidification. No description of any QA/QC sampling procedures were provided in the summary report.

Considering MTS's acknowledgement that the data were not analyzed "in a manner to determine the source of the lead," I requested all available information regarding the sampling protocol, experimental design, QA/QC, and other pertinent information to evaluate its utility in determining whether the cables may be a source of lead to Lake Tahoe. Very little of this information was available to me. For example, sampling station coordinates were only available for a handful of samples. Where coordinates were given in the documents I was provided, I mapped the sampling location and annotated the map with the associated lead result on Figure 2.

On March 30 and 31, 2023, MTS collected four water samples, seven sediment samples, and three samples of cable cladding.[111,112] The water samples were analyzed for lead via USEPA Method 200.7 and results ranged from non-detect to 38,000 µg/L.[113] Based on my mapping of coordinates listed for these four water samples, I understand that their locations were in proximity to Cable A and Cable B near the mouth of Emerald Bay (Figure 2). The sediment samples were analyzed for lead via USEPA Method 6010 and results ranged from 2.9 mg/kg to 799 mg/kg.[114] The cable cladding samples were analyzed via USEPA Method 6010 and ranged from 111,000 mg/kg to 135,000 mg/kg lead.[115] Along with the lab report, I was also provided with two documents containing field notes, photographs, and

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[106] MTS. 2023a. Lead Cable Investigation. Prepared for Tom Neltner, Environmental Defense Fund. Prepared by Monique Rydel Fortner and Seth Jones, Marine Taxonomic Services, Ltd. June 30, 2023. BTBMTS0016103 at 16110, 16168.
[107] MTS. 2023a. Lead Cable Investigation. Prepared for Tom Neltner, Environmental Defense Fund. Prepared by Monique Rydel Fortner and Seth Jones, Marine Taxonomic Services, Ltd. June 30, 2023. BTBMTS0016103 at 16111.
[108] MTS. 2023a. Lead Cable Investigation. Prepared for Tom Neltner, Environmental Defense Fund. Prepared by Monique Rydel Fortner and Seth Jones, Marine Taxonomic Services, Ltd. June 30, 2023. BTBMTS0016103 at 16173.
[109] MTS. 2023a. Lead Cable Investigation. Prepared for Tom Neltner, Environmental Defense Fund. Prepared by Monique Rydel Fortner and Seth Jones, Marine Taxonomic Services, Ltd. June 30, 2023. BTBMTS0016103 at 16114.
[110] MTS. 2023a. Lead Cable Investigation. Prepared for Tom Neltner, Environmental Defense Fund. Prepared by Monique Rydel Fortner and Seth Jones, Marine Taxonomic Services, Ltd. June 30, 2023. BTBMTS0016103 at 16115.
[111] Pace Analytical. 2023a. Analytical Report. April 14, 2023. PACE000001 at 26-27.
[112] According to the chain of custody, the sample "LT 1.2 Lead (Newer Cable) was collected on April 1, 2023. PACE000001.
[113] The Pace laboratory report noted that the water sample with a lead result of 38,000 µg/L was qualified as "M1," indicating that the matrix spike recovery exceeded quality control limits, but the batch was accepted based on laboratory control sample recovery (Pace Analytical. 2023a. Analytical Report. April 14, 2023. PACE000001 at 14, 21.). An electronic data table marked this sample result with a "J" flag in a field for qualifier text (BTBMTS0022450).
[114] Pace Analytical. 2023a. Analytical Report. April 14, 2023. PACE000001.
[115] Pace Analytical. 2023a. Analytical Report. April 14, 2023. PACE000001.

coordinates for the March 2023 sampling event.[116] I found no record of any QA/QC samples that may have been collected, including field blanks or equipment blanks.

On May 5 and 6, 2023, MTS collected 19 water samples and six sediment samples from Lake Tahoe.[117] The water samples were analyzed for lead via USEPA Method 200.7 and results ranged from non-detect to 38,700 µg/L. The highest concentration sample, LT 1.4, was described in field notes as a "recollection" sample.[118] These field notes, however, did not provide coordinates for the sample collection locations. This sample had the same identifier as a water sample collected in the March 2023 investigation; I inferred that these two samples were collected in the same location as the May 2023 LT 1.4 sample, given that it was described as a "recollection." Curiously, the two results were widely variable – the March 31, 2023 LT 1.4 water sample result was 98 µg/L while the May 5, 2023 LT 1.4 sample was 38,700 µg/L. Ultimately, no investigation report or otherwise contextual information was provided explaining these two drastically different results. The sediment samples were analyzed via USEPA Method 6010 and results ranged from non-detect to 646 mg/kg.[119] In sediment sample LT 1.4, presumably at the same location as the above-referenced water sample, the measured lead concentration was lower (7.2 mg/kg) than in the March 31, 2023 sample (39.8 mg/kg). Again, no investigation report contextualizing these results was available for review. In addition, I found no record of any QA/QC samples that may have been collected, including field blanks or equipment blanks.

The lack of any reporting describing this field investigation, any potential deviations from the proposed sampling method, data validity, or other pertinent information (including sampling coordinates for the May 2023 investigation) precludes a determination of whether the data are of sufficient quality for a determination of cable impacts in Lake Tahoe. I agree with MTS's acknowledgement that "these data were not analyzed by MTS in a manner to determine the source of the lead."[120] Additionally, MTS's reported concentration of lead in water include results up to 38,700 µg/L, which would be above the solubility limit for lead in Lake Tahoe, and further calls into question the validity of the sampling protocol and results.[121]

4.4.3 June 2023 Lake Tahoe Water Sampling

I have been provided with a document related to water sampling that MTS conducted in Lake Tahoe in June 2023. I understand that MTS has designated the results of its sampling as confidential.

I have not been provided with any other information such as reports, correspondence, or otherwise informative material to understand how the June 2023 experiment was designed, how it was implemented, or how the results were considered relevant in context to the investigation's objectives. In my opinion, these investigations do not support a conclusion that the cables are a source of lead to Lake Tahoe.

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[116] MTS. 2023b. California Data Collection – Final, March 30, 2023. Available at: https://belowtheblue.org/edf-report; MTS. 2023c. California Data Collection – Final, March 31, 2023. Available at: https://belowtheblue.org/edf-report.
[117] Pace Analytical. 2023b. Analytical Report. May 15, 2023. PACE000028 at 65-67.
[118] MTS. 2023d. California Data Collection – Final, May 5, 2023. BINKHORST000428 at 433-434.
[119] Pace Analytical. 2023b. Analytical Report. May 15, 2023. PACE000028 at 50-55.
[120] MTS. 2023a. Lead Cable Investigation. Prepared for Tom Neltner, Environmental Defense Fund. Prepared by Monique Rydel Fortner and Seth Jones, Marine Taxonomic Services, Ltd. June 30, 2023. BTBMTS0016103 at 16173.
[121] understand that Pacific Bell's expert Dr. Tiffany Thomas opined that the lead speciation is cerussite or hydrocerussite. Based on solubility experiments of hydrocerussite under varying conditions, Noel et al. (2014) measured steady state lead concentrations up to 1,205 µg/L which is less than the maximum measured concentration by MTS in Lake Tahoe (Noel, J.D., Wang, Y., and Giammar, D.E. 2014. Effect of water chemistry on the dissolution rate of the lead corrosion product hydrocerussite. Water Research 54 (2014) 237-246.).

4.4.4 California State Parks' sampling of the Eagle Point Campground drinking water intake directly refutes MTS's sampling

In May 2023, the Wall Street Journal contacted California State Parks and shared the results of a water sample that it says was collected at the Eagle Point Campground drinking water intake in Emerald Bay.[122] According to the email, the water sample contained 28.3 µg/L of lead. California State Parks then collected its own sample directly from the drinking water intake pipe prior to any treatment within the distribution system and did not detect any lead in the water sample using a more sensitive analytical method (USEPA 200.8) than the method used by MTS (USEPA 200.7).[123] This result directly contradicts MTS's results which further calls into question the validity of their results and representativeness of their investigations on the water quality in Lake Tahoe.

[122] Ramachandra, S. 2023. Email to Monique Rydel-Fortner, Seth Jones, and Susan Pulliam re: Campground testing result from Parks.
[123] Ramachandra, S. 2023. Email to Monique Rydel-Fortner, Seth Jones, and Susan Pulliam re: Campground testing result from Parks.

5. REFERENCES

ALS. 2020. Standard Operating Procedure. Sample Filtration for Metals Analysis. Effective June 31, 2020. ALS Environmental – Kelso. ATT_000022388.Boyd, K. 2020. Personal Communication. August 21, 2020. BTBMTS0024761.

BTBMTS0022450.

Buchman, M.F. 2008. Screening Quick Reference Tables (SQuiRTs). National Oceanic and Atmospheric Administration (NOAA). Available at: https://repository.library.noaa.gov/view/noaa/9327. Accessed June 25, 2024.

Chien, C., Allen, B., Dimova, N.T., Yang, J., Reuter, J., Schladow, G., and Paytan, A. 2019. Evaluation of atmospheric dry deposition as a source of nutrients and trace metals in lake Tahoe. Chemical Geology (511) 178-189.

Cranmer Engineering Inc. 2023a. Eagle Point Intake Sample Results. June 5, 2023. P1880_CP160_000001052.

Cranmer Engineering Inc. 2023b. Eagle Point Distribution Sample Results. June 15, 2023.

CSPA. 2024. Second Supplemental Declaration of Matthew C. Maclear in Support of Plaintiff's Motion to Amend Scheduling Order. California Sportfishing Protection Alliance v. Pacific Bell Telephone Company. United States District Court Eastern District of California. Case No. 2:21-cv-00073-JDP. January 25, 2024.

EHS Laboratories. 2022a. Analytical Report. June 15, 2022. EHS000063.

EHS Laboratories. 2022b. Analytical Report. June 15, 2022. EHS000083.

Enthalpy Analytical. 2020a. Analytical Report. July 13, 2020. BTBMTS0024694.

Enthalpy Analytical. 2020b. Analytical Report. September 2, 2020.

Gey, C. 1997. Telephone Cables. Handbook of Cathodic Corrosion Protection: Theory and Practice of Electrochemical Protection Processes. Gulf Professional Publishing.

Haley and Aldrich. 2024. Supplemental Report on Lake Tahoe Field Sampling and Analysis of Impacts of Legacy Telecommunications Cables on Water Quality, South Lake Tahoe, California. June 2024.

Jones, S. 2022. Personal Communication. May 22, 2022. EDF_000000069.

MTS. 2018. Derelict Submerged Cable in Lake Tahoe. Marine Taxonomic Services Ltd. December 19, 2024. BTBMTS0015770.

MTS. 2023a. Lead Cable Investigation. Prepared for Tom Neltner, Environmental Defense Fund. Prepared by Monique Rydel Fortner and Seth Jones, Marine Taxonomic Services, Ltd. June 30, 2023. BTBMTS0016103.

MTS. 2023b. California Data Collection – Final, March 30, 2023. Available at: https://belowtheblue.org/edf-report.

MTS. 2023c. California Data Collection – Final, March 31, 2023. Available at: https://belowtheblue.org/edf-report.

MTS. 2023d. California Data Collection – Final, May 5, 2023. BINKHORST000428.

Murphy, B.L. and Morrison, R.D. 2015. Introduction to Environmental Forensics, Third Edition. Academic Press, Oxford, GB.

Noel, J.D., Wang, Y., and Giammar, D.E. 2014. Effect of water chemistry on the dissolution rate of the lead corrosion product hydrocerussite. Water Research 54 (2014) 237-246.

Pace Analytical. 2023a. Analytical Report. April 14, 2023. PACE000001.

Pace Analytical. 2023b. Analytical Report. May 15, 2023. PACE000028.

Ramachandran, S. 2023. Email to Monique Rydel-Fortner, Seth Jones, and Susan Pulliam re: Campground testing result from Parks.

Ramboll. 2023a. Lake Tahoe Water Lead Study, Lake Tahoe, California. August 3 2023.

Ramboll. 2023b. Lake Tahoe Sediment Lead Study, Lake Tahoe, California. August 24 2023. ATT_000021909.

Ramboll. 2023c. Sampling and Analysis Plan, Lake Tahoe – Sediment Samples. July 2023.

Ramboll. 2023d. Sampling and Analysis Plan, Lake Tahoe – Water Samples. June 2023. P1880_CP153_000000025.

Rezvani. 2023. Email Re: Wall Street Journal on Eagle Point Campground Water; Deadline: COB Today. June 1, 2023. P1880_CP160_000001255.

Second Amended Complaint for Declaratory and Injunctive Relief and Civil Penalties. California Sportfishing Protection Alliance v. Pacific Bell Telephone Company.

Standard Methods. 2017. Standard Methods For the Examination of Water and Wastewater, 23rd Edition. Method 2340 Hardness.

SWAMP. 2022. Surface Water Ambient Monitoring Program Quality Assurance Program Plan. January 2022.

USEPA. 1994a. Method 200.7 – Determination of Metals and Trace Elements in Water and Wastes by Inductively Coupled Plasma-Atomic Emission Spectrometry. Revision 4.4. United States Environmental Protection Agency, Office of Research and Development, Environmental Monitoring Systems Laboratory, Cincinnati, OH.

USEPA. 1994b. Method 200.8 – Determination of Trace Elements in Waters and Wastes by Inductively Coupled Plasma – Mass Spectrometry. Revision 5.4. United States Environmental Protection Agency, Office of Research and Development, Environmental Monitoring Systems Laboratory, Cincinnati, OH.

USEPA. 2001. Method for Collection, Storage, and Manipulation of Sediments for Chemical and Toxicological Analyses: Technical Manual. EPA 823-B-01-002. U.S. Environmental Protection Agency, Office of Water, Washington, DC.

USEPA. 2002. Guidance for Quality Assurance Project Plans. EPA QA/G-5. United States Environmental Protection Agency, Office of Environmental Information, Washington, D.C. EPA/240/R-02/009. December 2002.

USEPA. 2005. Report Formatting and Presentation Guidelines. United States Environmental Protection Agency, Evaluation Support Division. March 24, 2005.

USEPA. 2014a. Sampling and Analysis Plan Guidance and Template. Version 4. R9QA/009.1. United States Environmental Protection Agency. May 2014.

USEPA. 2014b. Method 6020B – Inductively Coupled Plasma – Mass Spectrometry. Revision 2. United States Environmental Protection Agency, Washington, DC.

USEPA. 2015. Quick Guide to Drinking Water Sample Collection, Second Edition. United States Environmental Protection Agency, Region 8 Laboratory, Golden CO. November.

USEPA. 2023. Quality Assurance Project Plan Standard. United States Environmental Protection Agency. August 21 2023.

Williams, D. 2020. Email to Seth Jones and Monique Rydel-Fortner re: Attorney Communication – Status Updates ; Test Results. July 16. BTBMTS0024692.

FIGURES

PROJECT: 1940109116 | DATED: 6/26/2024 | DESIGNER: CWILLIAMSFREIER

Observed Cable Path (Ramboll 2023b)

0 1,250 2,500 Feet

CABLE LOCATIONS

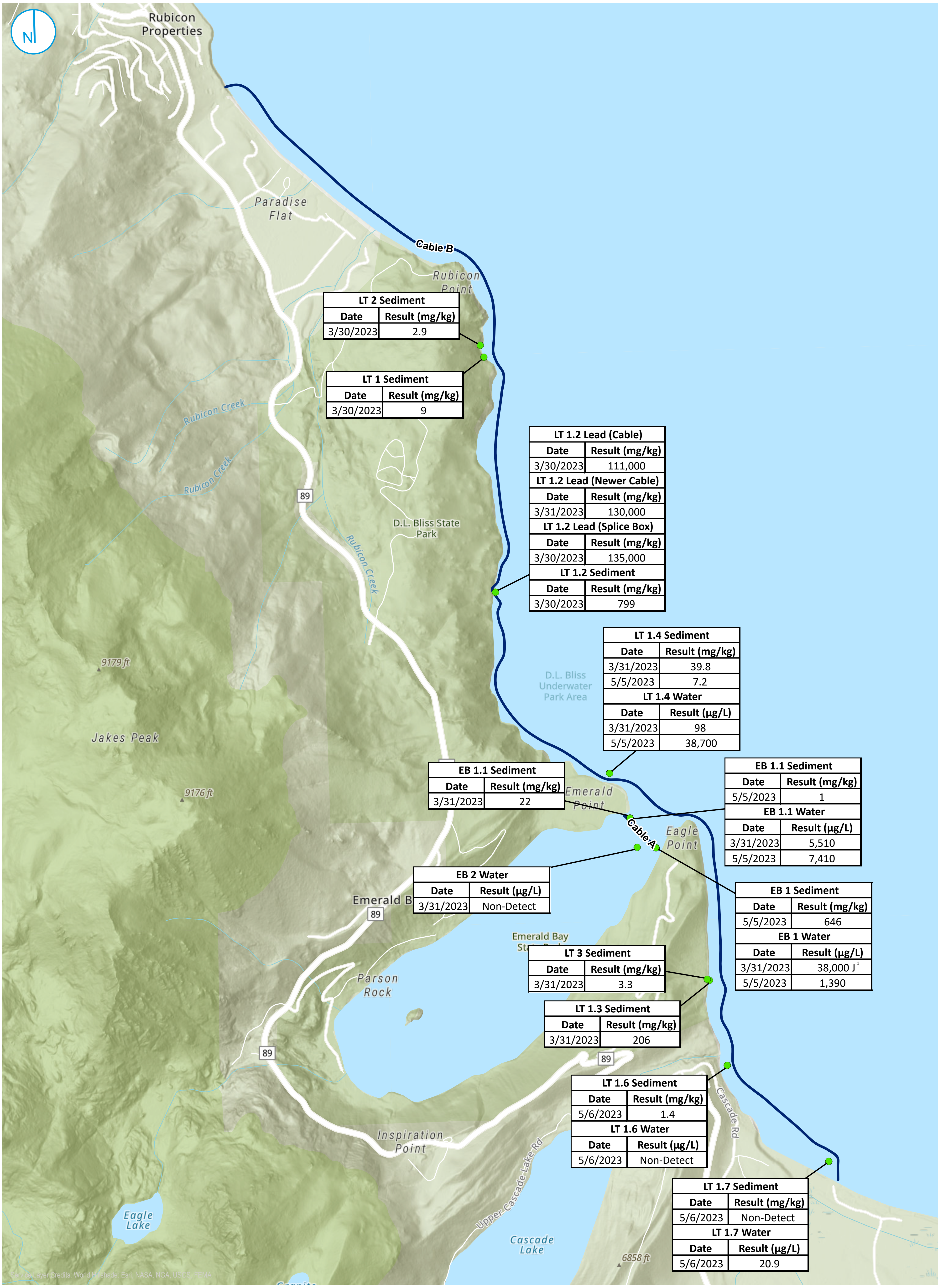
Lake Tahoe
California

FIGURE 1

RAMBOLL AMERICAS ENGINEERING SOLUTIONS, INC.
A RAMBOLL COMPANY

RAMBOLL

PROJECT: 1940109116 | DATED: 6/26/2024 | DESIGNER: CWILLIAMSFREIER



LT 2 Sediment	
Date	Result (mg/kg)
3/30/2023	2.9

LT 1 Sediment	
Date	Result (mg/kg)
3/30/2023	9

LT 1.2 Lead (Cable)	
Date	Result (mg/kg)
3/30/2023	111,000
LT 1.2 Lead (Newer Cable)	
Date	Result (mg/kg)
3/31/2023	130,000
LT 1.2 Lead (Splice Box)	
Date	Result (mg/kg)
3/30/2023	135,000
LT 1.2 Sediment	
Date	Result (mg/kg)
3/30/2023	799

LT 1.4 Sediment	
Date	Result (mg/kg)
3/31/2023	39.8
5/5/2023	7.2
LT 1.4 Water	
Date	Result (µg/L)
3/31/2023	98
5/5/2023	38,700

EB 1.1 Sediment	
Date	Result (mg/kg)
3/31/2023	22

EB 1.1 Sediment	
Date	Result (mg/kg)
5/5/2023	1
EB 1.1 Water	
Date	Result (µg/L)
3/31/2023	5,510
5/5/2023	7,410

EB 2 Water	
Date	Result (µg/L)
3/31/2023	Non-Detect

EB 1 Sediment	
Date	Result (mg/kg)
5/5/2023	646
EB 1 Water	
Date	Result (µg/L)
3/31/2023	38,000 J [1]
5/5/2023	1,390

LT 3 Sediment	
Date	Result (mg/kg)
3/31/2023	3.3

LT 1.3 Sediment	
Date	Result (mg/kg)
3/31/2023	206

LT 1.6 Sediment	
Date	Result (mg/kg)
5/6/2023	1.4
LT 1.6 Water	
Date	Result (µg/L)
5/6/2023	Non-Detect

LT 1.7 Sediment	
Date	Result (mg/kg)
5/6/2023	Non-Detect
LT 1.7 Water	
Date	Result (µg/L)
5/6/2023	20.9

- Plaintiff Sampling Locations
- Observed Cable Path (Ramboll 2023b)

0 1,250 2,500 Feet

[1] Pace laboratory report flagged this result as "M1" indicating indicating that the matrix spike recovery exceeded quality control limits, but the batch was accepted based on laboratory control sample recovery (Pace Analytical. 2023. Analytical Report. April 14, 2023. PACE000001 at 14, 21.). An electronic data table marked this sample result with a "J" flag in a field for qualifier text (BTBMTS0022450).

PLAINTIFF SAMPLING LOCATIONS AND LEAD RESULTS FOR SAMPLES WITH KNOWN COORDINATES

Lake Tahoe
California

FIGURE 2

RAMBOLL AMERICAS ENGINEERING SOLUTIONS, INC.
A RAMBOLL COMPANY

APPENDIX A

Curriculum vitae of Brian Drollette, Ph.D.

RAMBOLL

ENVIRONMENT
& HEALTH

BRIAN DROLLETTE

Senior Managing Consultant

Dr. Drollette is an environmental forensic scientist specializing in complex environmental chemistry problems at the nexus of empirical data and fate models. He leverages his background in environmental analytical chemistry and contaminant fate and transport analysis in a wide range of consulting areas. From contaminated site assessment, emerging contaminant liability evaluation, response cost allocation, and more, he advises clients on risk mitigation, regulatory compliance, and litigation support matters.

Dr. Drollette applies his expertise in chemical forensics across many industries and contaminant classes, including per- and polyfluoroalkyl substances (PFAS), petroleum, polycyclic aromatic hydrocarbons (PAHs), natural gas, chlorinated solvents (PCE, TCE, and degradation products), polychlorinated biphenyls (PCBs), dioxins and furans, metals, and more. He has worked on matters involving large contaminated sediment CERCLA sites, petroleum refineries, offshore oil spills, manufactured gas plants (MGPs), coal ash basins, military sites, dry cleaners, and chemical distributors, among others. He also has significant experience applying and interpreting chemical forensic techniques paired with contaminant fate and transport models for source attribution evaluation.

CONTACT INFORMATION

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3 Carlisle Road
Suite 210
Westford, MA 01886
United States of America

CAREER

2022-
Senior Managing Consultant, Ramboll

2021-2022
Managing Scientist, Exponent, Inc.

2019-2021
Senior Scientist, Exponent, Inc.

2018-2019
Scientist, Exponent, Inc.

2010-2013
Environmental Lab Assistant, William H. Miner Agricultural Research Institute

EDUCATION

Ph.D., Chemical & Environmental Engineering
Yale University, New Haven, Connecticut, United States

M.S., Chemical & Environmental Engineering
Yale University, New Haven, Connecticut, United States

M.S., Civil & Environmental Engineering
Duke University, Durham, North Carolina, United States

B.S., Environmental Science
SUNY Plattsburgh, Plattsburgh, New York, United States

COURSES/CERTIFICATIONS

HAZWOPER 40, 2018-

American Red Cross Adult First Aid/CPR/AED 2018-

MEMBERSHIPS

Environmental Business Council of New England - Water Resources Committee Leadership

National Groundwater Association

New York State Drinking Water Source Protection Program – Stakeholder Committee for the City of Plattsburgh

AWARDS & RECOGNITION

2023
Environmental Business Council of New England – Ascending Leader Award

RELEVANT PROJECT EXPERIENCE

PFAS Chemistry and Forensics – Natural Resource Damages Assessment
Provided consulting expert support for a dispute regarding PFAS emissions and alleged natural resource damages, specifically focused on PFAS chemistry and contaminant fate related to manufacturing sources.

PFAS Forensic Assessment
Provided site investigation and forensic interpretation support for PFAS impacts in groundwater at a former manufacturing facility in the Midwest U.S. Through PFAS fingerprint interpretation and a multiple lines of evidence approach, identified potential offsite sources for further investigation.

Drinking Water PFAS Sampling and Source Attribution
Conducted a forensic analysis of PFAS in drinking water and production wells at an active nuclear power to determine likely offsite sources.

Massachusetts PFAS Source Assessment
Conducted a desktop evaluation of claims brought by homeowners regarding PFAS in private drinking water wells allegedly sourced from the land application of biosolids. Provided expert opinions in an affidavit in support for a summary judgement motion.

New York Groundwater Chemistry Isotopic Fingerprinting
Applied compound specific isotopic analysis to determine the extent of VOC degradation in groundwater at a former chemical manufacturing facility. Presented findings to regulatory agency in support of continuing monitored natural attenuation.

U.S. Lead Investigation
Managed a nationwide investigation of lead and other metals in soil in proximity to telecommunications cables. Authored reports on findings and presented technical investigation approach to USEPA.

PFAS Operational Assessment
Conducted facility audits and compliance assessments for PFAS at several manufacturing sites including steel mills, geotextiles, metalworking operations, and more.

EU PFAS Operational Assessment
Conducted a PFAS assessment of a European manufacturing facility for potential releases and environmental impacts from legacy operations.

Environmental Due Diligence – PFAS Forensics and Liability Assessment
Ramboll conducted due diligence of a contaminated site in Tennessee to identify and quantify contamination-related risks and options for addressing impacts/issues at the property, including per- and polyfluoroalkyl substances (PFAS).

Environmental Due Diligence
Environmental due diligence of an industrial waste process operation and evaluation of potential PFAS-related liabilities.

1,4-Dioxane Contamination Assessment
Evaluated local and manufacturing sources of 1,4-dioxane in municipal groundwater wells by providing chemical manufacturing-specific analyses of byproduct formation.

Portland Harbor Superfund Site
Supported responsible party liability assessment for a bulk petroleum storage client in a large-scale alternative dispute resolution allocation of cleanup costs at the Portland Harbor Superfund Site.

Deepwater Horizon Oil Spill
Supported ongoing litigation regarding potential human exposure to crude oil and dispersants resulting from response operations to an oil spill. Conducted assessment of publicly available chemistry data to inform exposure.

Biosolids Land Application Assessment
Evaluated risk and acceptable thresholds for PFOS and PFOA in biosolids applied to croplands for beneficial reuse using groundwater vadose zone modeling.

Massachusetts PFAS Groundwater Contamination
Prepared a response to a MA DEP Request for Information. Client was identified as a potential source of PFAS in a groundwater aquifer used for municipal water supply. Response included historical research into company’s prior operations and manufacturing, and a hydrogeological analysis of the area with respect to the company’s site and the area of contamination.

U.S. Oil and Gas Producer Modeling Assessment
Prepared and presented explanation of various major oil spill fate and trajectory model algorithms to simulate oil-water emulsification. Compared model results to help identify the best choice under various conditions in an open-water oil release scenario.

California Former Metalworking Facility
Evaluated efficacy of a soil vapor extraction (SVE) system for chlorinated solvent remediation and claims of offsite migration at a former manufacturing facility. Analysis included preparing demonstratives for trial indicating the SVE system was effective and had little influence on offsite TCE migration.

Contaminated Groundwater PFAS Litigation
Investigated historical domestic and international manufacturing sources and importers of various PFAS compounds to support litigation involving a contaminated drinking water supply. Evaluated PFAS fate and transport effects on source fingerprints for forensic evaluations.

Upstate New York Underground Storage Tank Site
Assessed validity of fuel oil overfilling claim through multiple lines of evidence approach and forensic assessment of tank and contents. Submitted affirmative and rebuttal affidavits on likely sources to support ongoing litigation.

Southeastern U.S. Coal Ash Impoundments
Reviewed groundwater fate and transport models (MODFLOW – MT3D) built to understand contaminant distribution from six coal ash impoundments. Investigated claims of improper use of contaminant leaching properties and hydraulic head distribution through analyses of the transport code under various conditions required by regulators.

International Oil and Gas Producer
Conducted a review of in-line sensors for oil and grease measurements in produced water from offshore oil platforms. Provided recommendations for the technology and application of the sensors in the onboard produced water treatment system prior to discharge.

Northeastern U.S. Natural Gas Extraction Site
Investigated a house explosion allegedly caused by migrating natural gas. Performed gas forensic analysis to demonstrate source methane was not related to nearby hydraulically fractured wells.

California DOD Site
Investigated potential sources of 1,2,3-trichloropropane in groundwater near a former U.S. Air Force Base. Involved significant research into mil-spec products and materials used in runway construction for additives including 1,2,3-TCP

Marine Fuel Contamination Evaluation
Provided chemistry data interpretation and methodology support for an analysis of marine fuel allegedly contaminated with non-native fuel components.

Ohio Pipeline Drilling Operation
Investigated claim of PCE contamination from a horizontal drilling operation. Performed forensic analysis of drilling additives and mathematical modeling to understand potential artifacts in the drilling process contributing to alleged contamination.

Northeastern U.S. Sediment Site (CERCLA)
Used chemical forensic techniques coupled with historical operational information to identify and prioritize responsible parties along a contaminated waterway and implement contribution into a cost allocation model.

Midwestern U.S. Petroleum Refinery (CERCLA)
Applied refined petroleum forensic techniques to identify areas impacted by RCRA hazardous wastes. Evaluated extent of leaded gasoline soil contamination through weathering modeling.

Michigan Former Manufactured Gas Plant (MGP)
Evaluated relative impact of coal tar contamination at a former MGP from various gas manufacturing processes to assign responsible party share in a cost allocation model.

Montara Oil Spill
Applied crude oil petroleum forensic techniques to confirm sample origin for use in toxicity modeling in a large international surface oil spill.

Midwestern U.S. Petroleum Refinery (CERCLA)
Reviewed operational history and subsurface contaminant (refined petroleum) data to incorporate relative contribution into a cost allocation model.

California Agricultural Supply Distributor
Assessed historical groundwater contamination of 1,2,3-trichloropropane for past contributors at an agricultural supply distributor. Demonstrated that the client's past operations did not include manufacturing or handling 1,2,3-TCP based on registered chemical disclosures.

California Hospital Water Distribution System
Assisted in a root-cause analysis of an in-house copper-silver ionization water treatment system failure. Analyzed time series data for failure patterns and to identify risks and solutions.

PUBLICATIONS

2024

Total organic carbon measurements reveal major gaps in petrochemical emissions reporting
Peer-reviewed Article, Science, 383, 426-432
Authors: He, M.; Ditto, J.C.; Gardner, L., Machesky, J.; Hass-Mitchell, T.N.; Chen, C.; Khare, P.; Sahin, B.; Fortner, J.D.; Plata, D.L.; Drollette, B.D.; Hayden, K.L.; Wentzell, J.J.B.; Mittermeier, R.L.; Leithead, A.; Lee, P.; Darlington, A.; Wren, S.N.; Zhang, J.; Wolde, M.; Moussa, S.G.; Li, S.; Liggio, J.; and Gentner, D.R.

2023

Schrodinger's PFAS: The Gray Area Between EPA's Proposed Health Advisory Levels, Maximum Contaminant Levels, and Standard Analytical Methods
Article, American Bar Association, Superfund and Natural Resources Damages Litigation Publication
Authors: Drollette, B.D.; Pietari, J.

2021

Whose PFAS Is it Anyway? Legal Defensibility of Nonstandard Environmental Analysis
Article, American Bar Association, Superfund and Natural Resources Damages Litigation Publication
Authors: Deyoe, J.L.; Drollette, B.D.

2020
A data-driven framework for defining stages of oil weathering
Peer-reviewed article, Marine Pollution Bulletin, 154:111091
Authors: Cook, L.L.; Drollette, B.D.; Edwards, M.R.; Benton, L.D.; Boehm, P.D.

2020
Small aromatic hydrocarbons control the onset of soot nucleation
Peer-reviewed article, Combustion and Flame, 223:398-406
Authors: Gleason, K.; Carbone, F.; Sumner, A.J.; Drollette, B.D.; Plata, D.L.; Gomez, A.

2020
Waste containment ponds are a major source of secondary organic aerosol precursors from oil sands operations
Peer-reviewed article, Environmental Science & Technology, 54(16):9872-9881
Authors: Drollette, B.D.; Gentner, D.R.; Plata, D.L.

2018
Oligomer-specific, short chain linear alcohol ethoxylate quantification via comprehensive two-dimensional gas chromatography
Peer-reviewed article, Environmental Science & Technology Letters, 5(9):539-545
Authors: Drollette, B.D.; Brenneis, R.J.; Plata, D.L.

2016
Indications of transformation products from hydraulic additives in shale gas wastewater
Peer-reviewed article, Environmental Science & Technology, 50(15):8036-8048
Authors: Hoelzer, K.; Sumner, A.J.; Nelson, R.K.; Karatum, O.; Drollette, B.D.; O'Connor, M.P.; D'Ambro, E.; Getzinger, G.J.; Ferguson, P.L.; Reddy, C.M.; Elsner, M.; Plata, D.L.

2016
Hypoxia depresses CYP1A induction and enhances DNA damage, but has minimal effects on antioxidant responses in sheepshead minnow (Cyprinodon variegatus) larvae exposed to dispersed crude oil
Peer-reviewed article, Aquatic Toxicology, 177:250-260
Authors: Dasgupta, S.; Di Guilio, R.T.; Drollette, B.D.; Plata, D.L.; Brownawell, B.J.; McElroy, A.E.

2016
Oil sands operations as a large source of secondary organic aerosols
Peer-reviewed article, Nature, 534(7605):91-94
Authors: Liggio, J.; Li, S-M; Hayde, K.; Taha, Y.M.; Stroud, C.; Darlington, A.; Drollette, B.D.; Gordon, M.; Lee, P.; Liu, P.; Leithead, A.; Moussa, S.G.; Wang, D.; O'Brien, J.; Mittermeier, R.L.; Brook, J.; Lu, G.; Staebler, R.; Han, Y.; Tokarek, T.T.; Osthoff, H.D.; Makar, P.A.; Zhang, J.; Plata, D.L.; Gentner, D.R.

2015
Aerobic biodegradation of organic compounds in hydraulic fracturing fluids
Peer-reviewed article, Biodegradation, 26(4):271-287
Authors: Kekacs, D.; Drollette, B.D.; Brooker, M.; Plata, D.L.; Mouser, P.J.

PRESENTATIONS

Drollette, B.D.; McKnight, T.; DiFilippo, E.; Duncan, J.; Eberle, D. 2024. PFAS Forensics: State of the Science. National Groundwater Association, Groundwater in the PFAS Era: Stressors, Protection, & Compliance. April 17, 2024. Invited Panelist.

Pietari, J.; Mozumder, R.; Drollette, B.D. Branched and linear PFAS isomers: A tool for identifying PFAS manufacturing sources in the environment. AEHS East 39th Annual International Conference on Soils, Sediments, Water, and Energy. October 18, 2023. Oral Presentation.

Drollette, B.D.; Tabak, E.; Saretsky, M.; Watt, K. The Elephant in the Room? Regulatory, Legislative, and Litigation Updates on PFAS and Transactional Considerations. 17th Annual Environmental Transactional Roundtable. May 19, 2023. Oral Presentation.

Drollette, B.D.; Tabak, E.; Saretsky, M.; Watt, K. The Elephant in the Room? Regulatory, Legislative, and Litigation Updates on PFAS and Transactional Considerations. 17th Annual Environmental Transactional Roundtable. May 19, 2023. Oral Presentation.

Contaminants of Emerging Concern and Superfund: What Lies Ahead. Society of Environmental Toxicology and Chemistry (SETAC) North America 42nd Annual Meeting. Session Co-Chair. November 18, 2021.

What Keeps You Up at Night? A Discussion with Water Utilities in New England. Environmental Business Council of New England Water Resources Committee Webinar. Program Co-Chair. October 13, 2021.

Drollette, B.D.; Millions, D.; Parker, S.; Reitman, M. The PFAS Challenge: Beyond the Basics of PFAS in the Modern Era. Exponent Live Webinar Series. October 7, 2021. Oral Presentation.

Virtually Unstoppable! How to Accelerate Your Career from Your Home Office. Environmental Business Council of New England Ascending Professionals Committee Professional Development Webinar. Program Co-Chair. September 23, 2021.

Drollette, B.D.; Cook, L.; Benton, L.; Boehm, P.D. A Data-Driven Framework for Defining Stages of Oil Weathering. International Oil Spill Conference. May 14, 2021. Oral Presentation.

Drollette, B.D.; Cook, L.; Saba, T.; Getzinger, G. PFAS Environmental Forensics: Unique Approaches to a Unique Contaminant. AEHS Foundation 36th Annual International Conference on Soils, Sediments, Water, and Energy. Amherst, MA. October 21, 2020. Oral Presentation.

Drollette, B.D.; Cook, L.; Edwards, M.; Benton, L.; Boehm, P. A Data-Driven Framework for Defining Stages of Oil Weathering. Exponent Live Webinar Series. June 23, 2020. Oral Presentation.
PFAS Liabilities for Water Suppliers and Municipalities. Environmental Business Council of New England Water Resources Committee Webinar. Program Co-Chair. June 17, 2020.

Drollette, B.D.; O'Reilly, K.T.; Plata, D.L. Towards Increased Confidence in Compound Identification Using Comprehensive Two-Dimensional Gas Chromatography for Environmental Forensics. AEHS Foundation 35th Annual International Conference on Soils, Sediments, Water, and Energy. Amherst, MA. October 21-24, 2019. Poster Presentation.

O'Reilly, K.T.; Karatum, O.; Drollette, B.D.; Pietari, J. Next Generation Analytical Approaches: Implication for Contaminated Sediment Sites. Battelle International Conference on Remediation and Management of Contaminated Sediments. New Orleans, LA. February 11-14, 2019. Poster Presentation.

Gilman, L.; Drollette, B.D.; O'Reilly, K.T.; Skancke, J. Improving oil fate and transport models with GCxGC acquired data: enhanced component property characterization over time. Gulf of Mexico Oil Spill and Ecosystem Science Conference. New Orleans, LA. February 4-7, 2019. Poster Presentation.

Drollette, B.D.; Karatum, O.K.; Plata, D.L. Enhancing unknown compound identification in comprehensive two-dimensional gas chromatography using computer-predicted retention indices and spectral matching. EPA ENTACT Workshop. Durham, NC. August 13-15, 2018. Poster Presentation.

Karatum, O.; Drollette, B.D.; Pietari, J.P; O'Reilly, K.O. Next generation analytical approaches for non-targeted analysis. EPA ENTACT Workshop. Durham, NC. August 13-15, 2018. Poster Presentation.

Drollette, B.D.; Gentner, D.R.; Plata, D.L. Understanding the role of oil sands extraction and wastewater storage on regional air quality in Alberta, CA. Yale University School of Forestry and Environmental Studies Natural Resource Extraction Panel. New Haven, CT. August 21, 2017. Invited Talk.

Gentner, D.R.; Drollette, B.D.; Marcotte, A.; Sheu, R.; Li, S-M; Liggio, J.; Plata, D.L. Deciphering complex organic mixtures with very-high resolution tandem mass spectrometry: a case study on intermediate and semi-volatile organic compounds from oil sands processing. EGU General Assembly Conference. Vienna, Austria. April 23-27, 2017. Oral Presentation.

Plata, D.L.; Mouser, P.J.; Elsner, M.; Drollette, B.D.; Sumner, A.J. Chemical transformations in high volume hydraulic fracturing fluids. 253rd American Chemical Society National Meeting & Exposition. San Francisco, CA. April 6, 2017. Oral Presentation.

Plata, D.L.; Mouser, P.J.; Elsner, M.; Drollette, B.D.; Sumner, A.J. Chemical transformations in high volume hydraulic fracturing fluids. Lawrence Livermore National Laboratory. Livermore, CA. April 5, 2017. Oral Presentation.

Plata, D.L.; Sumner, A.J.; Drollette, B.D. Unconventional oil and gas development: predicting impacts on air and water through detailed chemical analysis. McMaster University. Hamilton, Canada. November 29, 2016. Oral Presentation.

Drollette, B.D.; Gentner, D.R.; Plata, D.L. What goes in must come out: organic compounds in oil sands, their extraction products, and environmental implications. 252nd American Chemical Society National Meeting & Exposition. Philadelphia, PA. August 21, 2016. Oral Presentation.

Plata, D.L.; Sumner, A.J.; Drollette, B.D. Unconventional oil and gas development: predicting impacts on air and water through detailed chemical analysis. Helmholtz Zentrum Munchen. Munich, Germany. July 19, 2016. Oral Presentation.

Drollette, B.D.; Gentner, D.R.; Plata, D.L. What goes in must come out: organic compounds in oil sands, their extraction products, and environmental implications. Gordon Research Seminar, Environmental Sciences: Water. Holderness, NH. June 26, 2016. Invited Talk.

Elsner, M.; Hoelzer, K.; Sumner, A.J.; Karatum, O.; Nelson, R.K.; Drollette, B.D.; O'Connor, M.P.; D'Ambro, E.; Getzinger, G.J.; Ferguson, P.L.; Reddy, C.M.; Plata, D.L. Indications of transformation products from hydraulic fracturing additives in shale gas wastewater. EGU General Assembly Conference. Vienna, Austria. April 17-22, 2016. Oral Presentation.

Liggio, J.; Li, S-M; Hayde, K.; Taha, Y.M.; Stroud, C.; Darlington, A.; Drollette, B.D.; Gordon, M.; Lee, P.; Liu, P.; Leithead, A.; Moussa, S.G.; Wang, D.; O'Brien, J.; Mittermeier, R.L.; Brook, J.; Lu, G.; Staebler, R.; Han, Y.; Tokarek, T.T.; Osthoff, H.D.; Makar, P.A.; Zhang, J.; Plata, D.L.; Gentner, D.R.

Oil sands operations in Alberta, Canada: a large source of secondary organic aerosol. AGU National Meeting. San Francisco, CA. December 14-18, 2015. Oral Presentation.

Drollette, B.D.; Hoelzer, K.; Elsner, M.; Warner, N.R.; Darrah, T.H.; O'Connor, M.P.; Karatum, O.; D'Ambro, E.; Vengosh, A.; Jackson, R.B.; Plata, D.L. Trace levels of diesel range organic compounds in shallow groundwater wells in northeastern Pennsylvania elevated near Marcellus shale gas wells. 249th American Chemical Society National Meeting & Exposition. Denver, CO. March 23, 2015. Oral Presentation.

Sumner, A.J.; Drollette, B.D.; Plata, D.L. Exploring the relevant parameter space in shale rock geochemistry: organic transformations at temperature and pressure. 249th American Chemical Society National Meeting & Exposition. Denver, CO. March 23, 2015. Oral Presentation.

Drollette, B.D.; Hoelzer, K.; Elsner, M.; Warner, N.R.; Darrah, T.H.; O'Connor, M.P.; Karatum, O.; D'Ambro, E.; Vengosh, A.; Jackson, R.B.; Plata, D.L. Hydrophobic organic compounds in Pennsylvania groundwater do not show influence of deep shale brines. AGU National Meeting. San Francisco, CA. December 18, 2014. Oral Presentation.

Plata, D.L.; Schreglmann, K.; Elsner, M.; Getzinger, G.J.; Ferguson, P.L.; Drollette, B.D.; Karatum, O.; Nelson, R.K.; Reddy, C.M. Hydrophobic organic compounds in hydraulic fracturing flowback waters: identification and source apportionment. AGU National Meeting. San Francisco, CA. December 2014. Poster Presentation.

Drollette, B.D.; Hoelzer, K.; Elsner, M.; Warner, N.R.; Darrah, T.H.; O'Connor, M.P.; Karatum, O.; D'Ambro, E.; Vengosh, A.; Jackson, R.B.; Plata, D.L. Organic compounds in shallow groundwater near shale gas wells of Northeastern Pennsylvania. Robert M. Langer Graduate Student Symposium. Yale University. New Haven, CT. December 5, 2014. Oral Presentation.

TEACHING EXPERIENCE

Organic Pollutants in the Environment, Yale University

Biological Processes in Environmental Engineering, Yale University

The Science of Science Fiction, Yale University

APPENDIX B

Documents Considered

Appendix B - Documents Considered

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Appendix B - Documents Considered

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Appendix B - Documents Considered

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Appendix B - Documents Considered

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Appendix B - Documents Considered

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Appendix B - Documents Considered

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BTBMTS0045404
BTBMTS0050493
CSPA000002
HA Supp. Report - Lake Tahoe Field Sampling and Analysis of Impacts of Legacy Cables.pdf
Lead Testing - Distribution - 6-23 (1) - Eagle Point Distribution lab results
LRWQCB_00000651
LRWQCB_00030298
Nitrate - Nitrite Test 2019 - DL Bliss
Nitrate - Nitrite Testing 2019 - Eagle Point
Nitrate Testing 2020 - Emerald Bay
Nitrate Testing 2020 (2) - DL Bliss
Nitrate Testing 2021 - DL Bliss
Nitrate Testing 2022 - Eagle Point
Nitrate Testing 2022 (2) - DL Bliss
Nitrate Testing 2023 - Eagle Point
Nitrate Testing 2023 (2) - DL Bliss
P1880_CP086_000000018
P1880_CP094_000000032
P1880_CP149_000000005
P1880_CP149_000000127
P1880_CP149_000000132

Appendix B - Documents Considered

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P1880_CP150_000000168
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P1880_CP157_000047910
P1880_CP160_000000149
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PACE000135
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PACE000239
PACE000249
PACE000266
PACE000380
Ramboll Sampling and Analysis Plan, Lake Tahoe - Sediment Samples.pdf

Note: Bates Number provided for document where available